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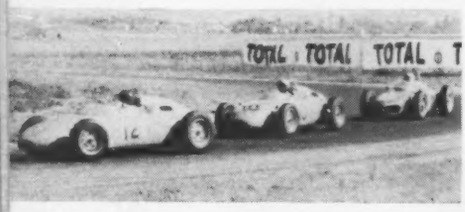
19

36

60



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OBSERVATION AND OPINION

DAN'S STORMING SEDAN—As many of you have already heard, Dan Gurney took delivery of the world's most famous two-door Chevrolet Impala (medium blue) in the first week of last March. This timing allowed dealer Don Steves to equip it with the booming 409-inch V8 which had just been released for Daytona use: 360 bhp at 5800 rpm, 6100 rpm redline. It carried the four-speed box, sintered iron brakes, power steering ratio without assist, stiff front springs and anti-roll bars at both ends. Goodyear Blue Streaks were mounted on 15-inch rims which were not reinforced, the advice of Chevrolet Engineering being that reinforcement in the stock car manner wouldn't be needed for road racing. For that, gentlemen, is what Dan intended to do with his radio-and-heater-equipped Impala. He'd long thought that a good U.S. sedan could clean up in British races against the big Jags, which hadn't been beaten at Silverstone since 1952.

After testing at Riverside (time: 2:16.6, faster than the Corvette lap record) the Chevy was filled with spare wheels and tires and driven to New York by mechanic Bill Fowler, who saw it safely aboard the S.S. American Builder. It arrived at Southampton, England just two days before practice began for the Silverstone International Trophy on May 6. Dan picked it up, washed off the sandy stains of its Riverside-New York journey, and drove it to Silverstone.

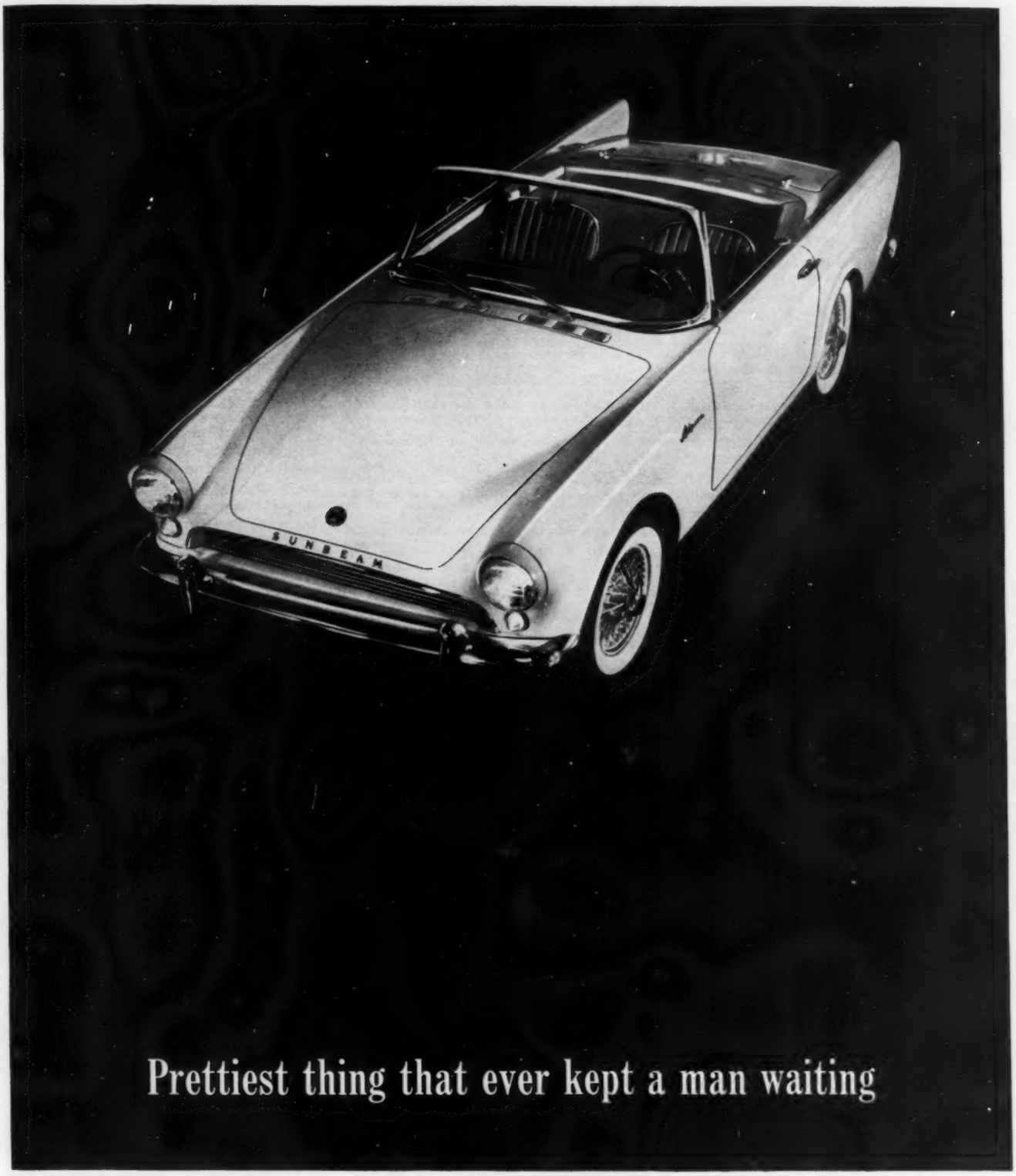
PHIPPS

At first practice on May 4 Dan was slower than all the 3.8 Jags, eliciting British comments like "Fancy trying to race a thing like that" and "Must be mad." He turned up the wick next day and clocked 1:55.8, some three seconds faster than the quick Jaguars. On race day this promise was fulfilled as the Chevy led by 200 yards on the first lap ahead of the Jags of Roy Salvadori and Graham Hill. Graham later moved into second but Dan kept him effortlessly at bay, braking earlier than the 3.8 but regaining ground on acceleration. All was well until the next-to-last lap, when the left rear wheel sheared through just outside the stud circle and the Impala slithered to a halt. Dan had lost, but he'd shown what the Chevy could do.

Next race was to be Silverstone again on July 8, when added competition was expected from a Ford sedan which had been exhaustively prepared by Chuck Daigh at Lance Reventlow's new shop. Dan had to wait 'til the last minute for special gaskets and reinforced wheels that were sent by Chevy immediately after the July 4th Pike's Peak run, but these arrived in time to race, if not practice. All was well until the day before the race when someone (reportedly Lofty England of Jaguar) sidled up to the organizers and said, "You know, of course, these cars aren't homologated and thus aren't eligible to run."

Dan Gurney immediately got on the transatlantic wire and confirmed that the papers had indeed been prepared and mailed to the FIA in Paris from the ACCUS in New York. Vicomte de Rohan, in Paris, admitted that he did have the papers on his desk but said that there was no time to issue the necessary homologation for the cars, a statement that seemed silly since a word from him would have allowed the cars to run – which was the point at issue, of course. Dan, tired of struggling with the situation, decided to quit trying, while Chuck Daigh regrettably cracked his pelvis after an almighty slide on a wet track in the Intercontinental Offy-Scarab.

Everyone concerned (except, apparently, the original wrench-thrower) agreed the cars were physically and morally qualified to compete; the disappointment of the crowd when they failed to show was tremendous. At the present time sedan racing in England seems to be a closed corporation – the rules were changed a few years ago to prohibit hopping-up when the Jaguars were being beaten by red-hot Anglias and Austin A40s – and no competition seems allowable today. Dan has sold his Impala to an enthusiastic Australian; there's talk of protesting the Jaguars the next time around, but otherwise all's quiet on a front that promised some real international action. —*Karl Ludvigsen*



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And with its roll-up windows, weather-tight top, foam-cushioned seats, wide-swinging doors, extra leg room, it may feel too comfortable to be a racing star. But it even won the Efficiency Cup in this year's Grand Prix at Le Mans, France. (Averaging an incredible 91 mph for 24 hours!)

There is one slow thing about Alpines. They're produced slowly. And word's got around that, at $2595* the Alpine is the hottest sports car ever. All of which is why you may be kept waiting for just a little while.

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LETTERS

NEW SPRITE REACTIONS

I was sorry to see in the July issue of CAR AND DRIVER that BMC has changed the Sprite. The engine and gearing changes are great, but I think they would have been appreciated much more by some of us that have owned Sprites over the past two or three years. I'm speaking for many of my friends who would have had more fun and better chances of winning in the production class.

In my opinion there were two things that sold the Sprite. Its distinctive appearance was one, regardless of whether or not you liked the headlight placement. The car was clean, completely functional and uncluttered. The new model will blend right in with everything from the Innocenti 950 to the Austin A-40. Some people will probably confuse it with the Fiat 1500 from the front and the Sunbeam Alpine from the rear. There are at least a half-dozen custom hoods available for the old Sprite that are more a part of the original car than the new one and the new one doesn't cut frontal area either. Why make a conformist out of the "Bug" just for the sake of change?

The second thing that sold the original Sprite was the price. With the $200 increase they are getting close to the MGA. If I had to trade my Sprite tomorrow I'd buy one of the old models or some other make.

BMC showed better sense in making model changes in the MGA and the Healey. Why pick on the Sprite? I'm a little amazed at the enthusiasm you expressed for the Sprite II after your Road Research Report on the Old Sprite in April. I truly feel they should change the name of the new car since there is nothing Sprite about it.

Lt. Col. Fred W. Sweet, Jr.
APO 20, San Francisco, California

How can they do it! . . . BMC is defeating the purpose of the Sprite. A friend bought one because it was cheap, small and fun to drive. So what do they do with the Sprite II? Longer, wider, more horses and more expensive. Brother! You might as well buy an MGA.

I'm sure many people would agree: "Get the new Sprite off the road and bring back the old." Amen.

A Sprite Lover
Glenside, Pennsylvania

Offhand it would appear that owners of BMC cars truly like or at least learn to live with everything about their cars except one thing: change! The uproar that followed the introduction of the MG TD (not a BMC car but one of their ancestors) as a replacement for the TC still hasn't fully quieted! When Porsche changed its body shell and mechanical specifications last year there was scarcely a grumble. The introduction of the VW 1500 was greeted with avid, but quiet, concern on the part of current owners. The modern-classic XK 150 Jaguars went unmourned when the E-Type debutted. Nevertheless the Sprite II apparently struck Sprite I owners like a punch in the nose. We think they're shedding crocodile tears.

While it's true the Sprite I had distinctive styling, the revisions in the body for the Sprite II are wholly functional and, we feel, more attractive. The mechanical changes may, of course, be carried out on Sprite Is, but it's a pleasant feeling to get in a new, stock Sprite and get real action when you step on the gas. As we said, none of the Sprite's fine handling traits have been changed a jot. While we can appreciate the attitude of Sprite I fans, we suggest they try a II-type and see what they've been missing.

THERE'S NOTHING NEW . . .

I would like to point out that the XKE Jaguar (C/D, May, 1961) is not the first car in production to use three windshield wipers. If you take a good look at the Riley Nine "Imp" I believe you will find that car used three wipers as far back as 1934.

I do agree though that more cars should make use of the idea. Back to the old "Nothing new under the sun." I like your all too few and far between features on home-built specials.

SPA Carl A. Price
APO 26, New York, New York

TROUBLE GETTING PARTS

I am the owner of an XK 140 Jaguar. I have had no trouble whatsoever getting parts for this car at any time. At most, I would have to wait two days for the parts to come from Momo in New York.

I recently bought a Chrysler 300-F for my wife. It is not a sports car, but a nice practical car for the wife. Well, I just cannot get parts for it. No Mopar wholesaler, much less a Chrysler dealer, stocks any parts that are not used on the standard Chrysler line. All parts must come from Detroit with weeks of delay, if they come at all.

Let no one complain about the difficulty in getting parts for foreign cars. I did not expect a dealer to be able to service the car, but I did expect to be able to get parts.

Edward D. Youmans
Ramsey, New Jersey

CALIFORNIA LIGHTING CODE

The letter from Mr. Jack Sohn of Oakland in your August issue contains some misleading information which may have caused unnecessary palpitations of the heart on the part of some imported car owners.

He says that "California owners should be advised of a new vehicle code requirement which prohibits the use of parking lights while running with headlamps on."

The vehicle code actually says that a car may not be run with the parking lights on *except* with the headlamps also on, which is a different matter altogether.

Lucas Electrical Service, Inc.
Norman J. Plummer
Vice President
Los Angeles, California

LOLA AND BOURGEAULT

I am surprised more general information was not given on the four cars in the Formula Junior article in the August issue. No mention was given as to the location or address of the Lola company and no mention is made concerning Nade Bourgeault. Where is he from, where is his factory?

Wilson R. Springer
Sports Motoring Editor
Los Angeles Herald Express
Los Angeles, California

Further information about Lolas is available from Eric Broadley, 9 Napier Road, Bromley, Kent, England. Bourgeault is not strictly a car builder but is interested in all kinds of special work; his address is: Nadeau A. Bourgeault, Box 412, Mill Valley, California.

MAIL FOR MR. FERREYRA

I am trying to find out more about Vincent motorcycles. Would you know of anybody with any spare information, pictures or what-have-you? In your July Letters column there was a letter from Eduardo Ferreyra, New York, New York. Would you possibly have his complete address?

Bruce Hennik
12 Sumner Park
Rochester 7, New York

Sorry, but we no longer have Mr. Ferreyra's letter. However we are printing your full address in the hopes that he or anyone else with info on Vincents will be able to contact you.

HOW MUCH DOES IT REALLY COST?

I would be interested, along with others outside the United States, to see a list of the expenses of an average motorist in America — such things as gasoline, oil, tires, insurance, spare parts, repairs and such over a six or twelve month period, not forgetting the depreciation on his vehicle.

M. W. W. Brazer
Chelmsford, Essex
England

TRIUMPH HERALD CONVERTIBLE

In your imported car listing in the May issue of CAR AND DRIVER, I looked in vain for the Triumph Herald Convertible. Since this model differs considerably from the Herald Sedan and Coupe, I am certain that you will agree it deserves a separate listing. Specifications are as follows:

Price, $2229; No. of Cylinders, 4; Displacement, 57.9 cu in; Bore and Stroke 2.48 x 2.99; Compression Ratio, 8.5; bhp @ rpm, 50 @ 6000; Speeds Forward, 4; Top Ratio, 4.55; Wheelbase, 91.5; Seating, 4; Dry Weight, 1650.

I think it also fair to point out that the Triumph Herald Coupe, which I assume is the model you intended to describe under Grand Touring, seats two and has an optional rear seat. The convertible is a full four seater.

These details will complete your coverage of all our models. Thank you very much.

Alan F. Bethell
President
Standard-Triumph Motor Company, Inc.
New York, New York

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EUROPEAN NEWSLETTER

FACTORY EXPANSIONS IN ITALY

One place where high production figures have never been idolized is Maranello, the home of Ferrari. Since early this year, however, a new assembly room with a two-story assembly line has been under construction and when completed, is scheduled to just about double production of Gran Turismo Ferraris, i.e. next year they might make as many as 2½ or 3 per day.

A vast project, in comparison, is Lancia's move to Chivasso. An utterly modern assembly plant is now nearing the finishing stage, where all Lancia cars can be made side by side. The commercial vehicle manufacture was centralized earlier in the Bolzano factory, and in the Turin establishments they are preparing the gradual move to Chivasso.

At the moment, assembly of Appia and Flavia models takes place in a three-story building, incorporating body welding, painting, etc. and activities, considering current production figures, are a bit cramped. Assembly of the Flaminia has already been removed from Lancia premises and is now carried out in the Bertone shops in Turin, except for special bodies on the G.T. made to order by Touring, Pininfarina or Zagato.

FACTORY EXPANSION IN SWEDEN

Volvo, in cramped quarters, surrounded by houses on the outskirts of Gothenburg, is rushing the completion of the "Torslandaverken" well outside the city limits. Bodies, which have up to now been delivered complete from the steel pressings works in southern Sweden, will now be welded in the new factory, starting this summer. The Torslandaverken will be fully completed in 1963 and will represent a 180 million kroner investment.

NEW SMALL SIMCA

Contrary to expectations, the Simca Ariane has overcome its handicap of being just an underpowered Vedette and now rivals the Aronde as the firm's best bread-and-butter earner. Now Simca is planning to extend its range downwards, and eight different prototypes of a 950 cc sedan are currently undergoing tests in France. A decision as to the specifications of the production model is imminent and we expect production to start at the end of the year. Simultaneously, Renault is preparing a facelift of the Dauphine, which should make it even more competitive.

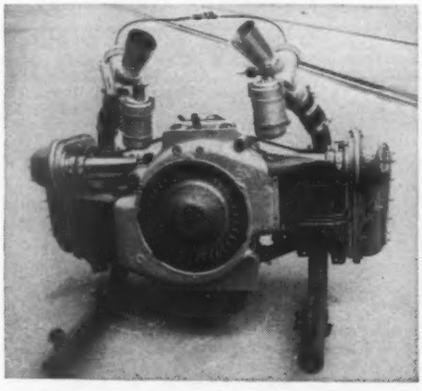
All this adds up to increased competition for the Ami-6 Citroën, a 602 cc model which in France sells at a higher price than the Dauphine. At the moment, Ami-6 assembly is carried out in the old Panhard works at Quai d'Ivry, in southeastern Paris, but at the end of the year it will be moved to Citroën's ultra-modern factory at Rennes in Western France, where production capacity exceeds 200,000 annually.

NEW FORMULA 1 CONTENDERS

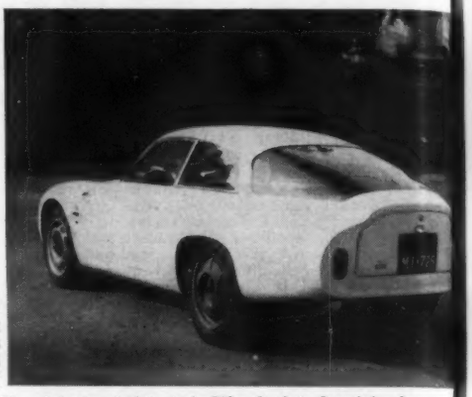
The Italians have taken to the new G.P. Formula like ducks to water. A new make appeared in the Grand Prix of Naples and finished in 5th place: the De Tomaso. This car had an Alfa Romeo Giulietta Sprint Speciale engine highly modified by Conrero, placed in the currently-fashionable location behind the driver. Later, an OSCA engine prepared by De Tomaso will be available. The rear suspension shows obvious Cooper influence, with unequal-length wishbones and an anti-roll bar on top of narrow-diameter coil springs enclosing Armstrong telescopic shock absorbers. The front end also features unequal wishbones, coil springs and telescopic shocks, plus an anti-roll bar.

The frame is typical of the current school of speed accommodating slender fuel tanks on both sides of the driver's seat, with separate filler caps. The wheels are four-stud lightweight discs and the brakes are Girling with De Tomaso-made discs and two master cylinders. The transmission, in the tail end of the frame, is based on Citroën and driven by a single dry plate clutch. There are five speeds forward and the ZF differential is of the limited-slip type.

Anglo-Italian collaboration has led to a further addition to the Grand Prix fray (See Gears Speed Development, C/D August 1961) in the shape of the Ferguson.



The Ferguson Grand Prix car has already been seen on English circuits as a forerunner to the Ferguson four-seat sedan. As the two have certain features in common, this would seem logical, even if it may be exaggerated thoroughness in development. The Grand Prix car is of course four-wheel drive, with a differential incorporated in the transfer case, and a Ferguson no-spin device in each differential. The five-speed gearbox is a Colotti design of very small dimensions. The engine is a Coventry Climax unit.



PRESSAUTO

The latest wind-tested Alfa Sprint Speciale by Zagato has a Ferrari-like bobbed tail. Good for 140 mph, it will be the standard SS body style.

ALLONS ENFANTS...

What about French participation? Some readers may be surprised to learn that a project involving Maurice Trintignant and backed financially by a wealthy industrial concern is indeed afoot. The car is still only in the drawing-board stage, but further details will follow as soon as possible.

In Formula Junior, Stanguellini is preparing new rear-engined cars. When we last visited Stanguellini there were two chassis nearing completion, with enlarged Fiat engines, disc brakes and rear suspensions more than slightly reminiscent of the latest Ferraris. Weight saving and a reduction in frontal area were the main improvements from last year's model—and road-holding is certainly superior. The new cars, however, apparently were begun too late to be much of a threat to British F. Jr. domination. *—JPN*

Hans Stuck corners hard in a recent event at Obersalzberg (below), driving the new BMW 700 RS. The trim little two-seater has a smooth aluminum body with a 697 cc engine in the rear. It has a 78-mm bore, a 73-mm stroke and 9.8 to one compression ratio. Maximum bhp is in excess of 70 at 8000 rpm. The two-cylinder engine (above) was based on the production unit, with new heads for competition use. The front suspension of the standard car (see SCI, October, 1960) is not changed, but the rear suspension's all new. The brainchild of Helmut-Werner Bonsch, the 700 RS is 4¾ in. shorter than the regular 700. No announcement has been made concerning possible production.

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THE START

Stirling Moss, Martini & Rossi
Motorsportsman of the Year—1960

Many races, particularly short ones, are won or lost at the start. From a grid start, which is the type most commonly used, the most important thing is to judge the r.p.m. which will give you the maximum acceleration—particularly if you are on the front row. Too many revs lead to violent wheelspin and loss of forward traction; too few will cause the car to hesitate when you let in the clutch, and may even stall the engine.

The next most important thing is to know the exact moment at which to let the clutch in. If the starter is also a competent time-keeper it is possible to synchronize your watch with his at the one-minute signal, and from this count down the last few seconds. At the same time watch the flag; once it has been raised it will probably go back slightly before it comes down. That is the time to go.

LE MANS STARTS

The secret of success at Le Mans-type starts is practice. This is something you can try out almost anywhere; you don't need to go to a circuit.

If it is permitted to leave the car in gear, the drill for a LeMans start is much simplified. First you count down the last few seconds as for a grid start. Then, as the flag falls you run across the road and leap into the car, opening and closing the door only if it's really necessary or if the regulations say you must. As you slide into the seat you switch on the ignition and as your foot pushes the clutch out you press the starter. As the engine fires you go down on the throttle, (not too much, as you have to start turning the car as soon as it's under way).

MARTINI & ROSSI SUGGESTS . . .

an enjoyable way to relax after the checkered flag goes down—M&R Vermouth on the rocks, a drink that is winning favor among sportsmen everywhere. Sweet or extra dry, Martini & Rossi Vermouth is great straight. It's America's favorite.

P.S.: Vote for your favorite driver . . . to receive the Martini & Rossi Award for Motorsportsman of the Year. Official ballot on page 14.

MARTINI & ROSSI

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DETROIT NEWSLETTER

by Roger Huntington

Cast iron construction is far from dead in our auto industry. The flurry of interest in aluminum engines, transmission cases, valve blocks, etc. in the last couple of years may have cast doubt on the future of the age-old cast iron technique. But there is ample evidence that we may be turning *away* from aluminum and back to cast iron in some applications. Not one of three all-new engines in the 1962 model crop is aluminum. In one case a cast iron V6 is supplementing an aluminum V8 after only one year of production — because the aluminum engine costs more to build. Aluminum engine development programs have been dropped in several companies and some aluminum engine tooling has been canceled.

NEW PRODUCTION METHODS

There's more to this trend than meets the eye. Admittedly production cost is a vital factor in our industry. But weight is important too, especially so in gas mileage, and our engineers wouldn't be going back to cast iron so readily if new developments in production techniques hadn't permitted radical weight reductions.

The secret is to cast thinner walls in the block and heads. With conventional ferrous casting in sand the minimum wall thickness is about 1/7th of an inch and in many areas the casting must be made much thicker than needed for strength just because the molten iron solidifies so fast that thinner sections would be porous and weak. The brittleness of regular cast iron is also a problem that invites thicker walls. The new engines have a minimum wall thickness of 1/10th inch, thinner sections all the way through and weigh 25 to 30 percent less for a given size.

Developments that make this possible include pre-heated core boxes and plastic resin binders for the fine core sand to virtually eliminate core distortion. In conventional casting the cores are removed from the forming boxes and baked in an oven. Damage and distortion is the rule so casting sections have to be made thicker to allow for this. With the new method the sand-plastic mixture is cured almost instantaneously in a pre-heated core box with practically zero distortion. Another important development at Ford is ramming the sand into the mold with smooth hydraulic pressure, rather than pounding with a compressed-air ram. This gets a denser mold structure, smoother surfaces and closer dimensional accuracy.

Then there's the important matter of

iron alloy. You could never cast conventional gray iron in molds like this because it solidifies so quickly from chilling in the mold that it would be full of pores, blowholes, and other defects. Also it's so brittle that the thin sections would crack. The answer is "ductile iron". It has been found that a very small percentage of magnesium alloyed into the iron will greatly increase its strength and ductility and will also slow down solidifying to improve fluidity in the mold. It's just the ticket for thin-wall casting. International Nickel Company holds patents on the stuff, and gets $6 a ton royalty for everything produced.

RETURN TO THE IRON AGE

This is the formula for tomorrow's lightweight cast iron engine. With the new methods it's possible to design head and block sections to utilize the strength of the material, rather than having to make everything unnecessarily thick so it could be cast in a sand mold. The results are already spectacular. At the present time ('61 model crop) the only U.S. production cylinder block that uses any of the thin-wall casting techniques is the Ford Falcon-Comet six. The 170-cubic-inch version of this block weighs 83 pounds after machining. Compare this with the 135-pound weight of the Lancer-Valiant slant six — also 170 cubic inches — but using the old thick-wall methods. In fact the Falcon-Comet iron block weighs only 18 pounds more than the die-cast *aluminum* version of the Lancer-Valiant design!

All the new 1962 engines feature thin-wall cast iron construction, and this is just the beginning. Such foundry techniques have the potential for casting sections considerably thinner still — if we can get the iron alloys with the ductility and fluidity to do the job. These will come and then we'll have iron engines that are virtually as light as today's aluminum engines!

FOUR-SPEED FORDS

I hear Ford is having some trouble clearing the Borg-Warner four-speed floorshift transmission for optional use in 1962 models. As you know this is the basic transmission used by G.M. for Corvette, Chevrolet and Pontiac — (and possibly later for Buick Special and F-85). I hear G.M. is trying to hold up use of the basic design in Ford products — though it was said to have been offered to Chrysler a year ago, with G.M.'s blessing! Studebaker-Packard also took it up at that time for the Hawk series.

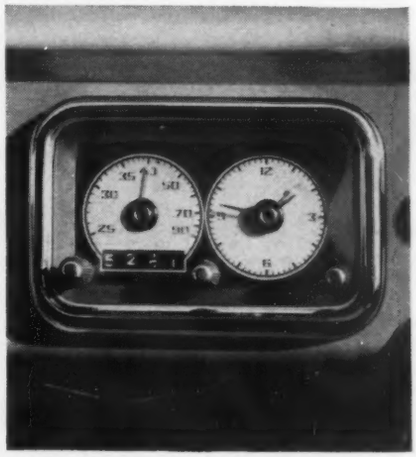
Actually it's a very cute problem. The famous B-W four-speed is nothing more than a standard heavy-duty three-speed main gearcase with a special gearset, and reverse gear is behind the main case in the tailshaft housing. Ford is already using the main case for their high-performance stick-shift models. They would need to use their own individual tailshaft housing for purposes of engine mounting anyway. So the argument would have to revolve around the special gearset (separate wide-ratio set used in heavy passenger cars) — and maybe the general idea of the adaption. Anyway if you don't see four-speed Fords announced this fall, have patience!

—RH

Test your sports car IQ!

QUICK QUIZ BY QUAKER STATE

1. Can you name this old-time racer?



2. In what kind of event is this dashboard instrument used?

3. Can you name this American race track?

4. What does this symbol stand for?

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Answers: 1. 1928 Bentley. 2. Halda Speed Pilot computes time over distance in rallies. 3. Sebring (Florida) Race Track. 4. Symbol of the world's finest motor oil.

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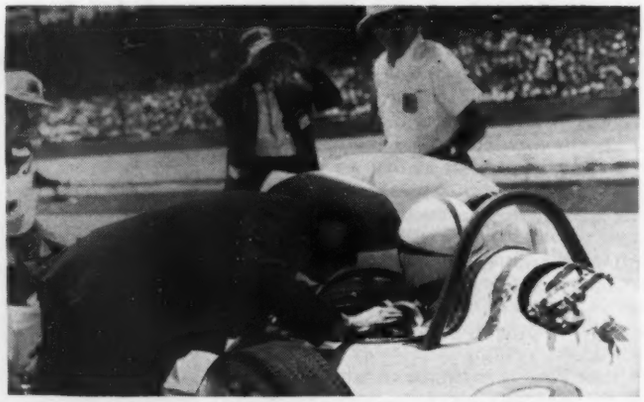
An
inside view
of the 11th
Champion-sparked
Indy win
in the last 12 years

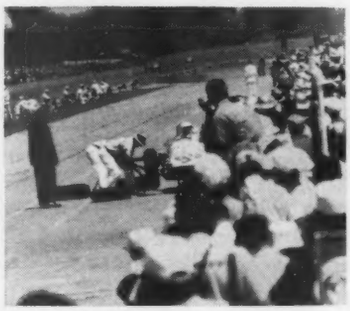
Champions spark the power as Foyt wins "500" in record time!

The fastest, hardest pace in Indianapolis history cuts the field of 33 starters to 12 still running at race end! Three different brands of plugs sparked those starters—and again Champions spark the winner! Here's a close-up look at Indy—the world's toughest test of men, machines, and the parts that make them go . . .

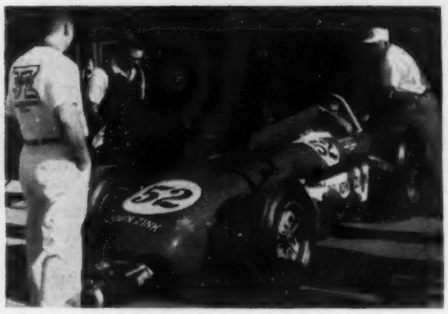


Parnelli Jones, who led pack for 27 laps, tells car owner J. C. Agajanian he will keep driving despite eye injury that caused much bleeding. Jones finished race, was co-choice for "Rookie of Year" award, with Bob Marshman, who started 33rd, finished 7th. Both ran on Champion spark plugs.

The historic bricks are crowded with cars and crews awaiting the famed command, "Gentlemen, start your engines!" At left of bottom row, with hood up, is Foyt's Champion-sparked mount that led the pack for 74 laps, including the all-important 200th lap.



Jim Hurtubise, who charged into lead on first lap to pile up pack of records, gets tires and fast fill-up. Hurtubise kept his Champion-sparked racer in front for over 87 miles, retired from race with mechanical difficulties.



In garage area, owner John Zink (center) inspects his Champion-equipped Zink Special. Troy Ruttman, 1952 Indy winner, drove it to new competition lap record of 147.589 mph, led for 10 laps. Jim Rathmann also led the race (15 laps) using Champions.

Victory! The dream of every race driver comes true for A. J. Foyt, Jr., as he takes the checker in his Champion-sparked Bowes Seal Fast Special, after a record-cracking pace of 139.130 mph! Foyt and his head mechanic and car owner, George Bignotti, also chose Champion spark plugs to run the 1960 Championship Trail, where Foyt won National Championship.

Before race, Champion's Head Racing Engineer Don Garner (l.) checks spark plug "readings" on winning car with owner-mechanic George Bignotti. An expert at the tremendous task of setting up a car for a race, Bignotti said, "Champions are the best plugs I've ever used. I've tried others, but Champions seem more 'foolproof,' and always give good service. We use them in all our cars."

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PIPELINE

The brief romance between SCCA, FIA and USAC which faded suddenly has blossomed again with the amateurs plighting their troth to the international group.

Meeting late in July, the SCCA Board of Governors adopted a sweeping 12-point policy change whose keystones are avowed cooperation with FIA in sanctioning road races and "no restrictions on financial arrangements which may be made by any of its members." National licensees will be permitted to run in any FIA road race. Here's the background.

VALENTINE'S DAY

The thorn in the side of many top SCCA drivers, the owners of their cars and race promoters was the SCCA's resistance to permitting SCCA drivers' participation in professional events. However, SCCA did make exceptions in some cases, permitting them to run at Sebring, Le Mans and some other events provided they were not paid for anything but expenses. Late last year, with USAC seeking an expanded pro-am sports car card, the two groups got together under the auspices of the FIA's American Competition Committee, joined by NASCAR. On Valentine's Day of this year the coordinated action toward a cohesive American racing schedule was announced with Charles Moran, Jr., chairman of the committee, stating "With every major entity in the automobile racing field in the U.S. now working together, as I hope and am sure they can, it will be a fine record for the international motor sport in this country.

USAC BLASTS SCCA

By June the USAC said it had failed to work out an agreement with the SCCA so that amateurs would be permitted to participate in a limited number of open, pro-am events. USAC charged the SCCA had failed to approve a single event up to that time and the issue was brought to a head by SCCA disapproval of the FIA-listed races at Indianapolis Raceway Park June 24 and 25 and FIA-approved Continental Divide races July 1 and 2.

THE FIA ULTIMATUM

Later, on June 27, the FIA's Automobile Competition Committee of the United States announced, in effect, that if the SCCA didn't shape up it could ship out. It said SCCA drivers licensed by the FIA would be suspended "indefinitely" from FIA-accredited events in the U.S. and elsewhere.

The SCCA was given until July 5 to reach accord over permitting SCCA amateurs to run with the pros. Mr. Moran said the decision was "necessitated by the near-last-minute move made by the SCCA Board of Directors to prohibit its drivers from participating in two full international events. One of these was the meeting held at Mosport, Canada [see further in this column for comments on Mosport] June 24, the other the event of yesterday, June 25, at Indianapolis." He added, "SCCA had given every indication of going along with these two events . . . then, only two weeks before the two events were to be held, SCCA announced its decision not to permit its members to participate in the races."

July 5 came and went with no agreement and SCCA drivers were duly suspended by the FIA. On July 6, the SCCA issued "a correct statement of the facts in question."

SCCA SCORES CRITICS

The SCCA said its policy regarding pro-am racing was first promulgated in November, 1960 by the Board of Directors. After heated discussions it was reaffirmed at the annual meeting in New York City in February. In brief, it recognized the desirability of allowing SCCA drivers to compete against the world's best pros and thus condoned permitting SCCA drivers to run in "a few, selected, prestige, international, open events to be named by the Board of Governors. Any professional races not so approved were automatically barred to SCCA drivers."

SCCA called "completely false" statements that the SCCA had first approved then backed down on the Mosport and Indianapolis races.

FIA "PRESUMPTUOUS"

The amateur group maintained there were "no grounds" for the FIA suspension "unless the FIA presumes to tell the SCCA what its policy should be in regard to FIA events in the U.S., i.e., that the SCCA should approve *all* FIA events. The latter, if that be the implication of the FIA, is presumptuous in the view of the SCCA." It added the suspension, if kept in effect for "any length of time, would jeopardize" the okay given the Laguna Seca and Riverside races.

THE PLOT THICKENS

For a while it looked as if the squabble would foul up plans for the pro racing announced in last month's Pipeline as Sid Langsam of Continental Divide Raceways announced he was canceling all of the sports car races left for the season. But apparently there was enough support for the Denver Post-sponsored event so it, at least, is still scheduled as we go to press.

THE HAPPY ENDING

The SCCA declaration greatly liberalizes the club's policy and if implemented could give it the ruling hand in running road races in the U.S., including an increased number with international participation. Reaction to the new policy was quick and enthusiastic. The Road Racing Drivers Club immediately endorsed it for its "forward-looking policies."

The U.S. FIA unit was silent but may be expected to rescind its suspension of SCCA drivers. The only question remaining is whether or not the USAC will quietly bow out of the road race picture. For a while, when the SCCA was opposed to racing for pay, USAC came to the forefront as the likely instigator. And now? We'll see what happens.

In effect what the policy change says is that a National license holder can race anywhere, provided the race has FIA approval. He will be able to drive for pay and for starting and prize monies if he desires. The effect on the sport, we hope, will be equally desirable.

(Continued on page 16)

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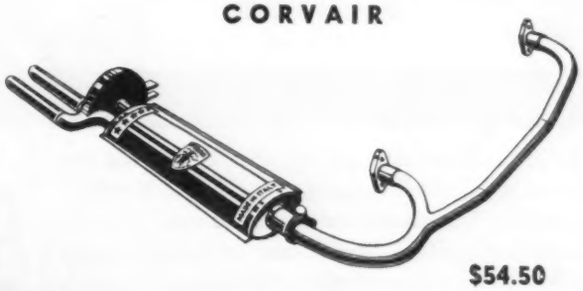

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(Continued from page 14)

This item properly belongs in the "It Never Fails Dept." Shortly after our August issue went to press, the White House announced that President Kennedy would be using a brand-new 22-foot Continental for his official car. Among the features the **new Presidential limousine** will have are the following: retractable running boards for Secret Service men, a choice of hard, transparent or no top at all to meet every climate (meteorological or political) and a power back seat to elevate the President 10½ inches so he can be visible to crowds without having to stand up over long parade routes. Replacing an 11-year-old bubble top Lincoln, its body was designed by Hess and Eisenhardt, of Cincinnati, and FoMoCo.

Charmant Imports, Dept. C/D, Garden City, New York, a source of many distinctive items of interest to car enthusiasts, is

offering a 21 by 9 by 13-inch **goatskin bag** that should be useful for hauling lots of things, from clothes to cameras. It's priced at $45, tax included and postpaid.

Sunglasses **imported from France** should be useful year-round for driving, at the

beach or skiing. For full information about the wrap-around shades, in men's or women's styles, contact Vilem B. Haan, Inc., Dept. C/D, 10305-15 Santa Monica Boulevard, Los Angeles 25, California. Include 50 cents for a fully-illustrated catalog – the four bits is refunded on your first order.

Editors of JAGUAR JOURNAL, the monthly publication of Jaguar Clubs of North America, have published a combination August-September issue containing 11 technical. Article under the heading **"Know Your Jaguar."** It will be available to non-club-member Jag owners for $2 per copy. Orders are being accepted by Jaguar Clubs of North America, Dept. C/D, 32 East 57th Street, New York 22, New York. The data pertains to late-model Jags.

We've "discovered" **a car cosmetic** that does all its makers claim for it. We tried it on a staff-member's car which had all the glitter of a cinder block. The finish was not

only restored to showroom gleam but the chrome fairly sparkled and water now

beads on the surface the way it does with a good wax covering. The job was dispatched with a modicum of labor, much less than the results would indicate. The products we used were Collinite Pre-Wax Cleaner ($1.25 per pint), Collinite Double-coat Wax ($2.50 for 7 ounces) and Collinite Chrome Wax ($1.15 for eight ounces). Dealers and car owners may obtain further information about the products by contacting the Collinite Chemical Company, Dept. C/D, Utica, New York.

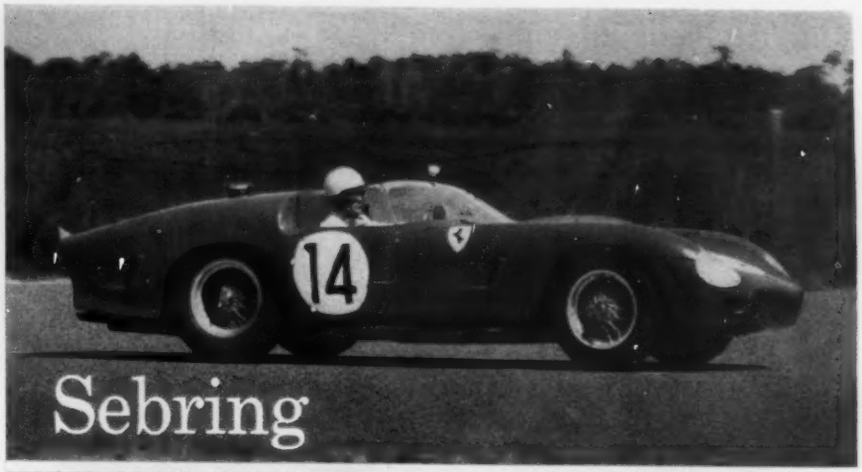
Massey-Ferguson (Massey-Harris) of Great Britain, manufacturer of diesel and marine engines, has signed an agreement with NSU to manufacture the **Wankel** engine under license with the actual manufacturing undertaken by F. Perkins (England).

RAM Engineering is shifting its operations from Turin, Italy to the United States but will continue to offer a full line of hop-up equipment for Fiats, Alfas and Crosleys and expects to have opened a racing garage by winter. The move is expected to bring closer contact with the firm's customers. The new address for RAM is Dept. C/D, Box 8514, Philadelphia, Pennsylvania.

Those Canadians exhibit a real exuberance about their racing. An estimated 40,000 fans—the most to ever see a race in Canada—invaded the inaugural event at Mosport Park in Ontario in June. Traffic was jammed up for more than ten miles, many fans abandoning their cars at far as three miles away and walking to the circuit. About 25,000 tickets had been printed (more than enough, Canadian Racing Drivers Association organizers felt) but by noon they had run out.

The racing was a Moss benefit. He won both 100-mile heats in the Player's 200 and set the fastest lap in a Lotus 19, winning $2,750 plus $5000 appearance money. Joe Bonnier gave him his greatest competition, finishing second in both heats with a Porsche RS61. Third overall was Olivier Gendebien in another Porsche. Moss set a new lap record of 86.4 mph for the 2.4-mile circuit. Two new Sadler Mk. Vs were entered, driven by Bill Sadler and Grant Clark. Clark's finished fifth overall while Sadler's came in last overall although it had finished seventh in the first heat. Clark gave the crowd a show when during the closing laps of the second heat he pushed past Gendebien to grab a third place.

Moss, Bonnier and Gendebien are expected to return to Mosport September 30 to compete in the Canadian Grand Prix. Mosport Park is located between Lindsay and Peterborough, Ontario, about 35 miles north of route 401.



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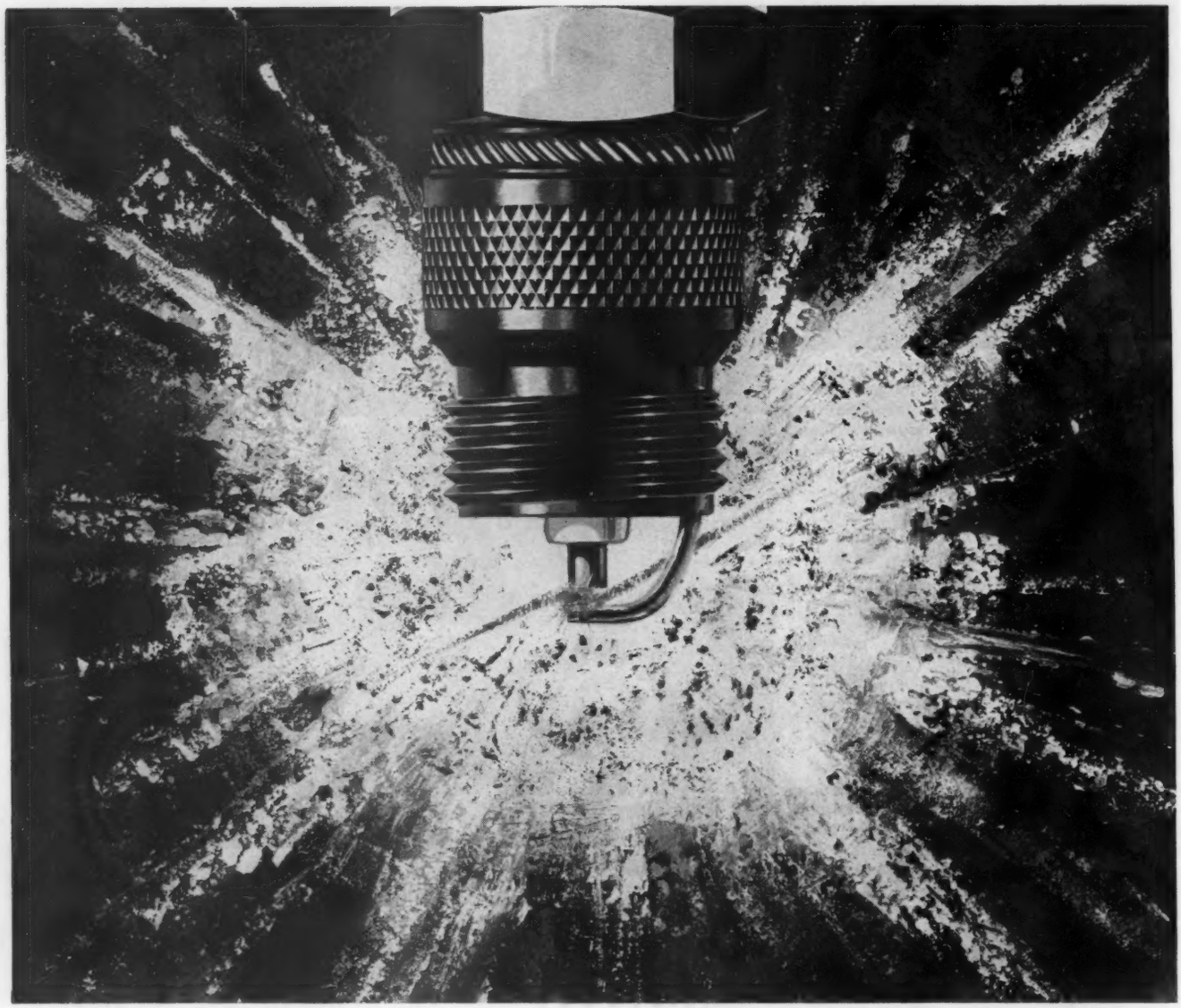

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Dennis May used the removable roof of Triumph's new TR-4 to make notes for this Technical Report on a gutty new sports machine with all the snap of its sister mated with the silky smoothness of a modern grand tourer.

TR-4!

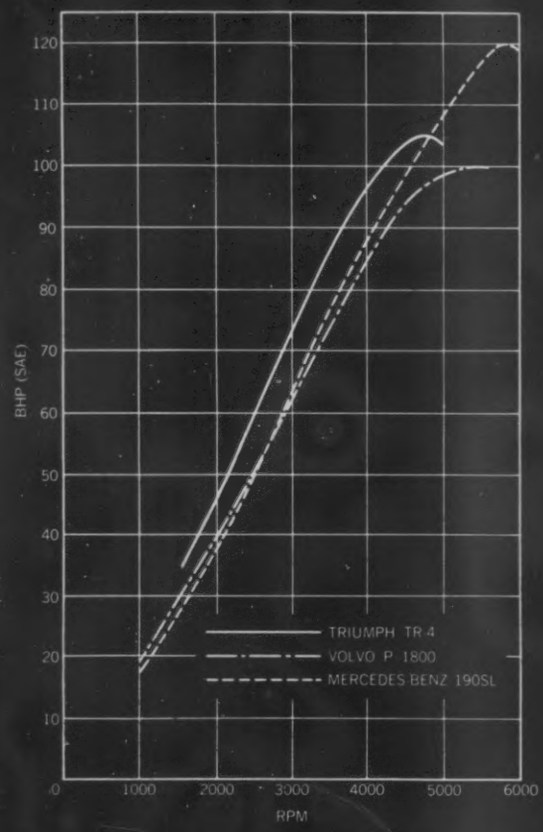
► So now we know. Triumph's intriguing twin-cam engine, exclusively analyzed in CAR AND DRIVER's June issue, does *not* power the TR-3's successor. The TR-4, to be available in the U.S. in about a month, has a powerplant perpetuating Standard-Triumph's established recipe for production units: cast iron construction, pushrods and rockers knocked by a single camshaft in the crankcase, more stroke than bore. But the car as a whole marks a turning point in TR history, bears practically no visible resemblance to its last-of-kin, and embodies engineering changes that also are definitely advances. TR-3 partisans need not lament the coming of the big 4. It is an addition to the line, not a replacement for the 3.

It was extra torque, rather than power, the Standard-Triumph engineers were looking for, and they got it by the simplest and cheapest method in the book, stretching the cylinder bore of their existing engine as far as it'd go without endangering safety limits. Complementarily, they raised the compression ratio a half-unit to 9 to 1. Everything else they left as it was – stroke measurement, carb sizes, head design, port shapes, cam form, the lot. Wet-linered as it is, in the unbroken TR tradition, this engine lent itself very conveniently to bore expansion. Specifically the new sleeves, centrifugally cast from nickel-chrome iron, have diameters of 86 mm or 3.386 inches, compared with the TR-3's 83 mm (3.27 inches). This raises the displacement from 1991 cc (121.5 cubic inches) to 2138 cc (130.5 cubic inches). Experimentally 87 mm liners, as used in Standard-Triumph's tractor engine, were tried, but fears that the latter's monotonous reliability might not be reproduced (there's a big difference between the two types' compression ratio and, consequently, bmep ratings) dictated a cutback.

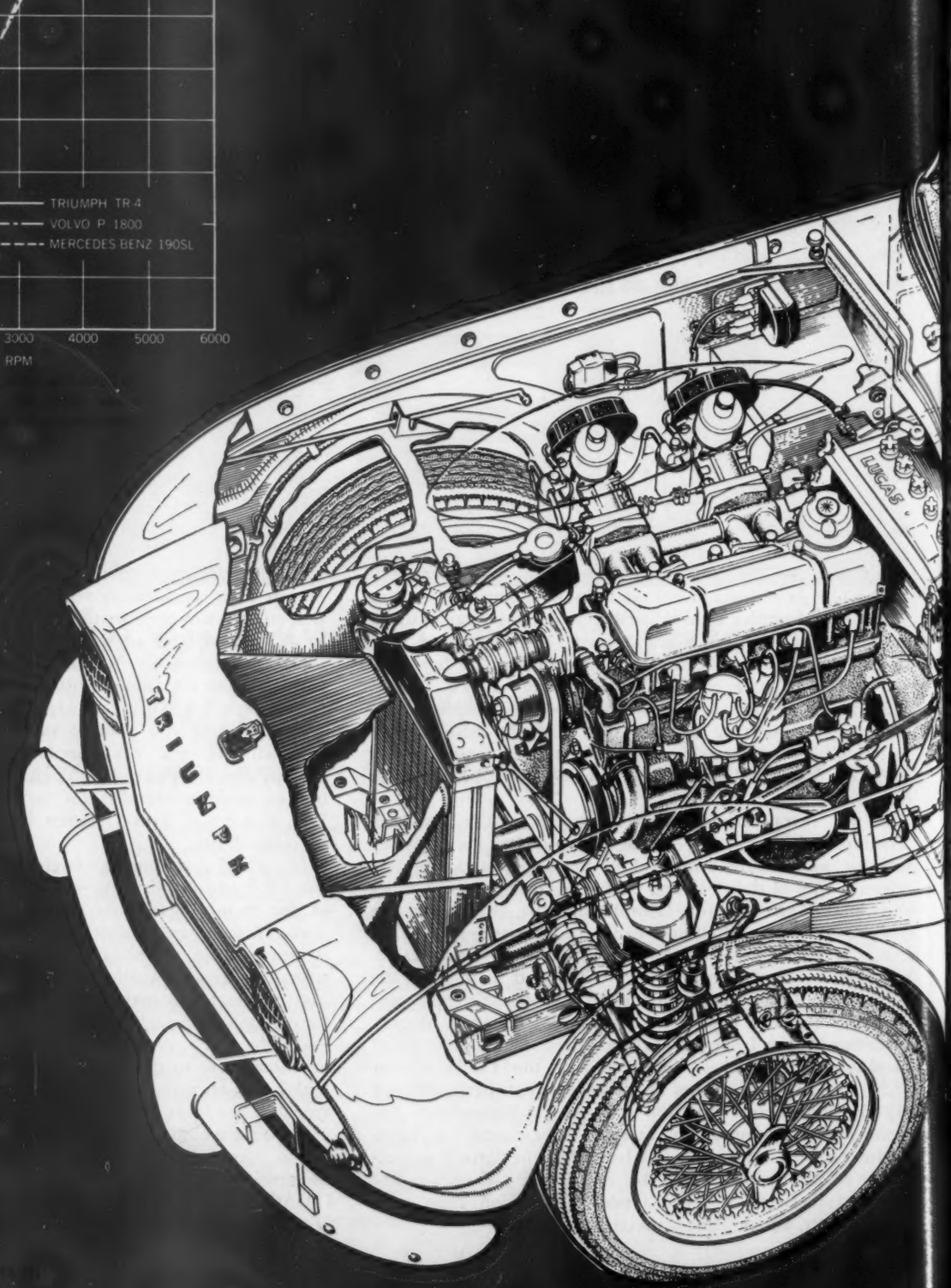
The power gain mentioned amounts to the difference between the TR-3's 100 bhp gross and the TR-4's 100 net; and it's significant that the latter develops its maximum output at a considerably reduced turnover, 4600 rpm – 400 per minute slower than the "3". Torque goes up from 118 to 127 pound-feet, auguring a worthwhile improvement in top-gear acceleration in, for example, the 60-to-80 mph band, though maximum twist is now produced at *in*creased engine speed – 3350 rpm as against the two-liter's 3000. Incidentally, if you plan to race a TR-4 under the FIA's Appendix C, you can specify the two-liter engine and thereby avoid a prohibitive displacement handicap. Another option, mainly intended for territories lacking high-grade fuel, is a c.r. of 7 to 1, gotten by a change in combustion chamber depth.

In other departments, engineering differences between the TR-3 and its offspring – known by the code name "Zest" at the factory before its unveiling – are four in number. Two of these are visible to a naked-eye inspection of a stripped chassis, the others aren't. Immediately obvious is the structure's greater width; tread has been upped by a drastic four inches to 49 inches front, 48 rear (the TR-3's treads were equal at 45 inches), making a striking breakaway from the older car's rather punnetlike proportions. These dimensions refer to the standard stud-attachment disc wheels; with knock-on wire wheels, optional at extra cost, equivalents are 50 inches front, 49 back.

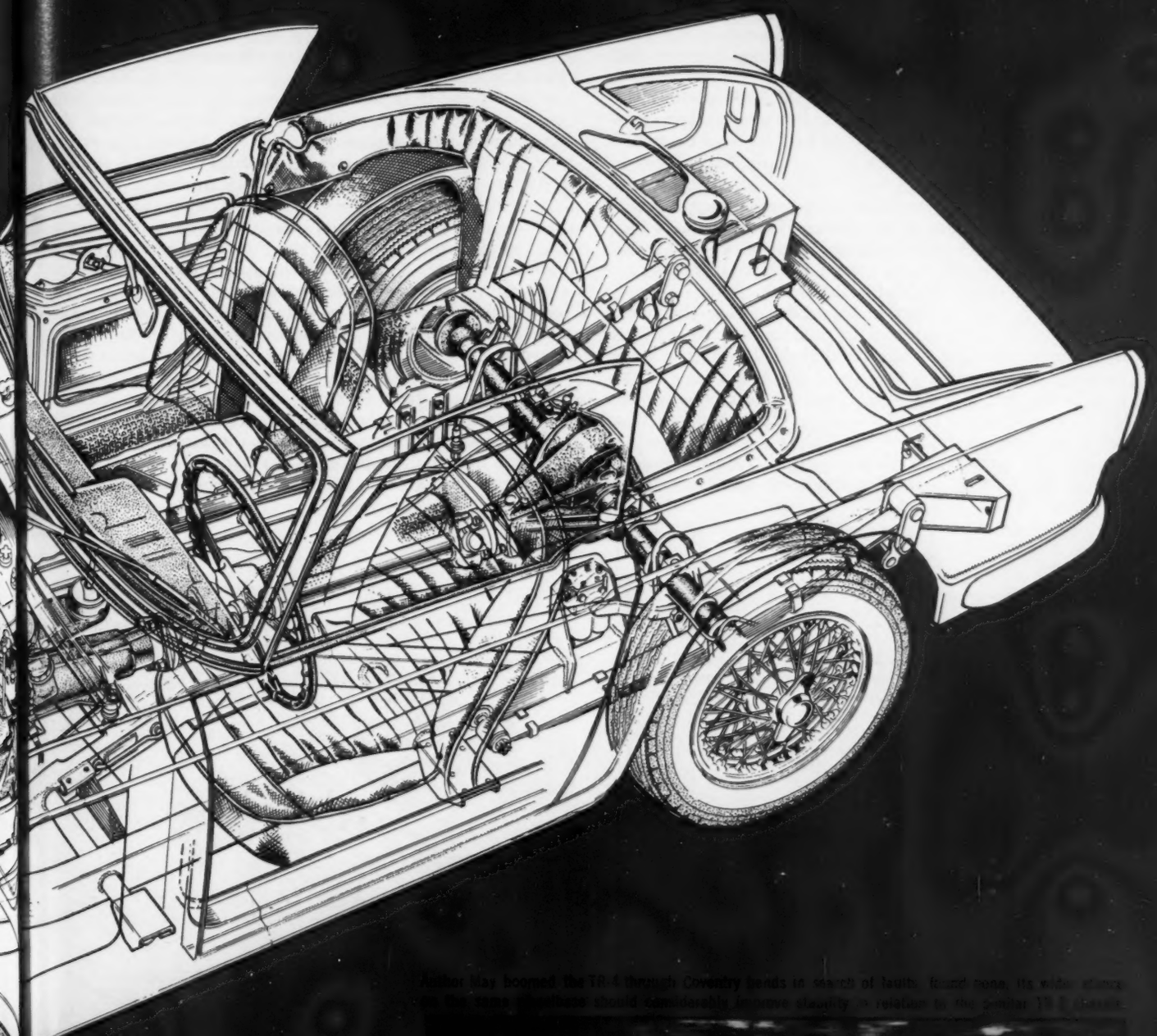
Chassis developments to which there's no visible clue are (a) a considerable stiffening of the frame side members, effected by welding an extra longitudinal wall into the boxed U-girders, internally, and (b) softer settings all around for *(Text continues on page 22; data and cutaway overleaf.)*



The best-looking and most comfortable sports Triumph made may well prove the fastest too.



SPECIFICATIONS: TRIUMPH TR-4



Author slay boomed the TR-4 through Coventry bends in search of faults, found none. Its wider stance and fine steering gearbox should considerably improve stability in relation to the earlier TR-3 chassis.

the shock absorbers, which are, as before, telescopic in front, enclosed by the coil springs, and piston-type in back. Otherwise the suspension is identical with the TR-3's.

Fourth and last engineering innovation, perhaps the most important of all, is the grafting of synchromesh onto first gear; the other three, of course, always were synchronized. This lets Triumph owners in on a transmission feature that hitherto has been exclusive to such enlightened and expensive makes as Alfa and Porsche, and gives them a tangible advantage over the direct competition. Outside the first-gear area, the box and its contents are unchanged in design but the former is lengthened by ⅝ inch to accommodate the first-gear synchromesh. As a counterpoise to factors that, in sum, make the TR-4 a slightly heavier car than the TR-3, material for the gearbox casing and integral clutch bellhousing is aluminum alloy.

Michelotti, who designed the Herald bodies, also styled the TR-4 — back in 1959. He did so, we were told at Standard-Triumph's Coventry factory, in half an hour flat, which suggests this is a branch of art in which first thoughts can be best. Purposeful and aggressive rather than pretty, it's paneled in steel and has a high inherent strength factor, shown by the fact that it contributes 34% of the car's total torsional stiffness. Another practical merit of the shell is that both pairs of fenders have bolt-on attachment and so are easily detachable for repair of crash damage.

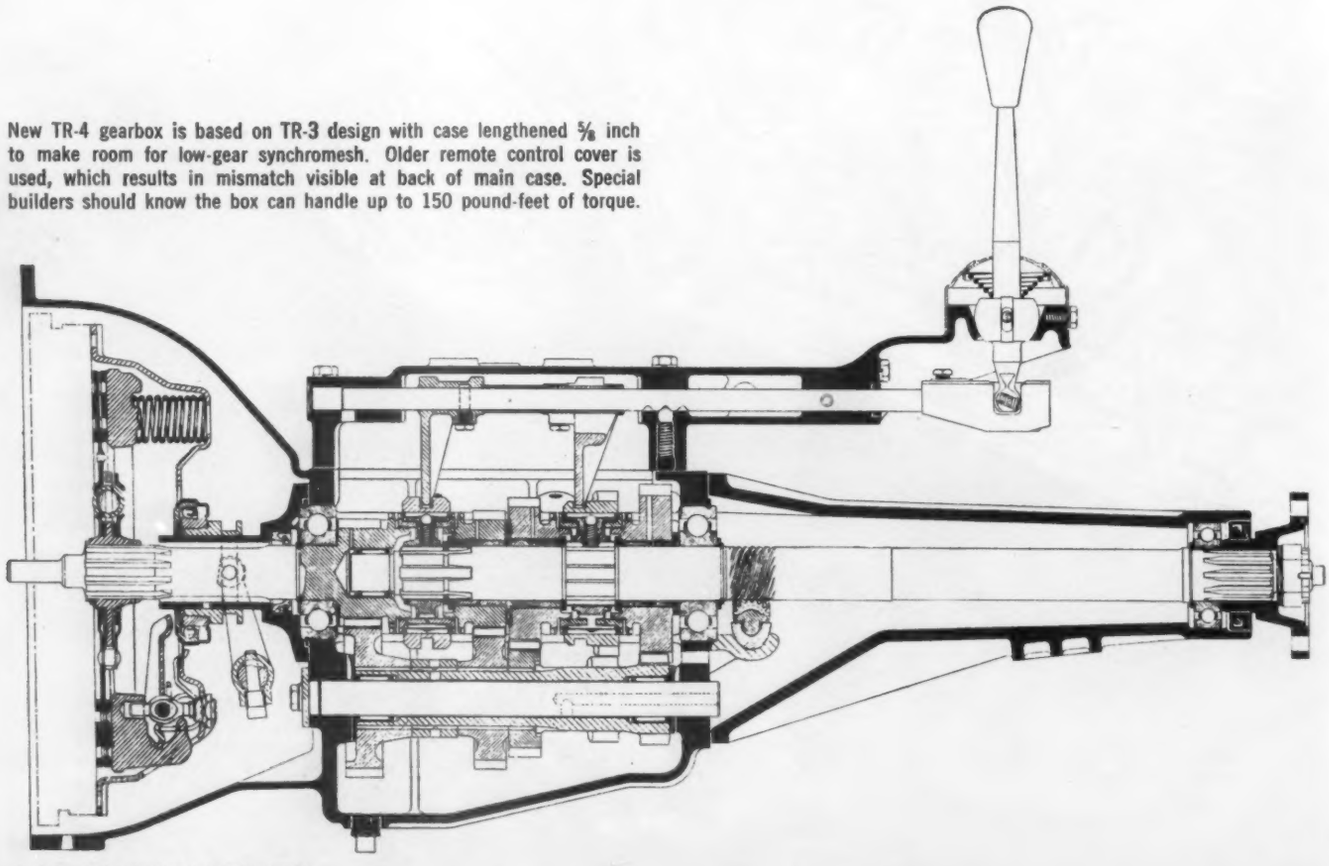
Increasing tread by four inches while leaving the wheelbase alone might be expected to produce an unbecomingly squat length/width ratio, but this is avoided by deep swaging around the wheel arches and along the nether edge of the body below the door openings. Result is that although the TR-4's overall width (57½ inches) is 2 inches more than the TR-3's, the former's flanks, as distinct from the projecting swages, are actually no further apart. Viewed head-on, though, the entirely new grille treatment and flatter hood expanse creates an attractively low-and-wide impression. From the windshield pillars rearwards to the tail, the body shape is identical with the twin-cam Le Mans car's; apropos, the engine bay, unlike the TR-3's, is designedly long enough to swallow the d.o.h.c. engine if Standard-Triumph ever took such a move into its head.

Featured for the first time on Triumph sports cars are roll-up windows and a front-hinged hood; the latter has an asymmetrical bulge over the dual SU carburetors and, as you lift the lid, gravity automatically drops the stay into its appointed notch and detains it there. Trunk capacity, per se, isn't much increased, but the trailing edge of the lid is now carried down almost to bumper level, enlarging the opening appreciably.

An original and very promising approach to an old problem is seen in the design of the optional hardtop. This is of course detachable *in toto* in the usual way, by undoing four nuts, two on the screen bridge, two at the base of the wrap-around rear window. In addition, though, its actual roof panel is detachable from the hardtop shell itself, leaving a skyview opening which, if it rains, can be shut in a matter of seconds by buttoning in a simple rectangular sheet of weatherproof plastic material, known in factory parlance as the "surrey top." Out of use, this rolls up for stowage as a compact sausage. Too, hardtop-equipped cars can be supplied with a soft top, design of which has been much improved. Its hoopwork is now in-built and articulated, rather than being detachable, and there's provision for buttoning the material to the framing above the passengers' heads so an inrush of air through an open window doesn't set up a lot of bellying and flapping. New too are the elastic stretchers built into the side edges of the soft top, ensuring a taut fit onto the roll-up windows when these are closed and resisting wind-flap under all conditions.

In spite of the engine bay enlargement, interior length

New TR-4 gearbox is based on TR-3 design with case lengthened ⅝ inch to make room for low-gear synchromesh. Older remote control cover is used, which results in mismatch visible at back of main case. Special builders should know the box can handle up to 150 pound-feet of torque.



of the body has been slightly stretched by increasing the overhangs; total length of the car, 13 feet, is five inches more than the TR-3's. As before, trunk space is supplemented by an undercover compartment behind the passengers' seats; as an option, this is upholstered to form seats for two small children. Access to it is by hinging the front passenger's seat forward (the driver's seat is fixed). The seats themselves are TR-3 pattern, nominally "bucket" but hardly so in the term's fullest sense, with rather shallow but comfortably concaved backs. They have the usual fore-aft adjustment and – an important point – the steering column borrows the Herald's adjustability. A secondary feature of this, you'll remember, is that as a safety measure it collapses on impact. Resetting requires torque wrenches and is therefore not just a few seconds' job, as in the case of the Bluemel telescopic device that was a TR-3 option.

Dash layout has been radically updated; instrumentation is complete and attractive. Conspicuous in this department is a central sub-panel spanning the space between the panel's bottom edge and the transmission hump, carrying three push-pull heater controls. Primary purpose of this is to banish dash shake – the panel is extended downwards on each side of the hump and its "legs" pass through the floorboards and finally pick up on the chassis frame. The main instrument *cum* control cluster comprises a matching speedometer and tach of large diameter, oil pressure gauge, fuel gauge, water thermometer, ammeter, push-pull knobs for choke, lamps, wipers and screenwash, ignition switch. The whole dash is cladded in matt black plastic material and its upper and lower rails are well padded. The same goes for the dual sun visors.

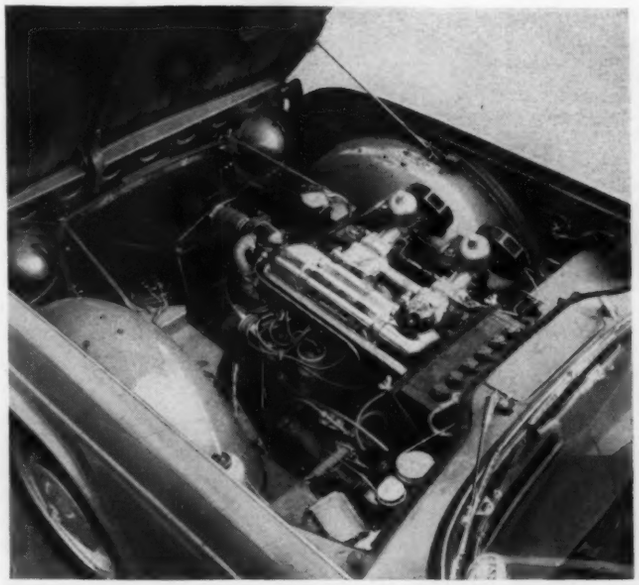
Other panel equipment includes an ashtray and a lockable cupboard of useful size for small personal articles. A fresh-air heater is an extra and has provision for directing its output – hot or cold, of course – onto the passengers' feet or out through grilled vents in each end of the dash; these have individual controls built in.

Laycock overdrive operating on second, third and top gears is again an option; when fitted, its control stalk is mounted on the right side of the steering column, balancing the turn indicator switch lever. Standard gearbox ratios are the same as the TR-3's with the sole exception of first, which has been slightly raised.

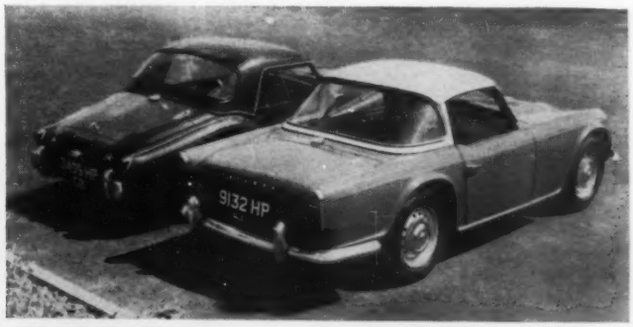
The total list of options is as exhaustive as ever and includes – additional to items already mentioned – racing screens, tonneau, two-speed wipers, radio, aluminum sump, competition front springs and rear shocks, a trunk-fitting suitcase, leather upholstery (PVC leathercloth is standard), Dunlop Roadspeed tires, Durabands, Michelin X, a starting handle.

The TR-4 weighs about 28 pounds more, dry, than the TR-3 – a surprisingly small difference when related to the visual impression of considerably increased size in every dimension except height. Pending a Road Research Report, we briefly tried a prototype hardtop car in Coventry's neighboring countryside and formed a very favorable opinion of it. The car seems to have all the old directness and immediacy of response without the TR-3's characteristic twitchiness, and is certainly a more restful rig to drive. For reasons that aren't deduceable from the specification, it was noticeably quieter, both in mechanical and exhaust terms, than the "3". The car we drove didn't have the new all-synchro transmission, so this must await evaluation.

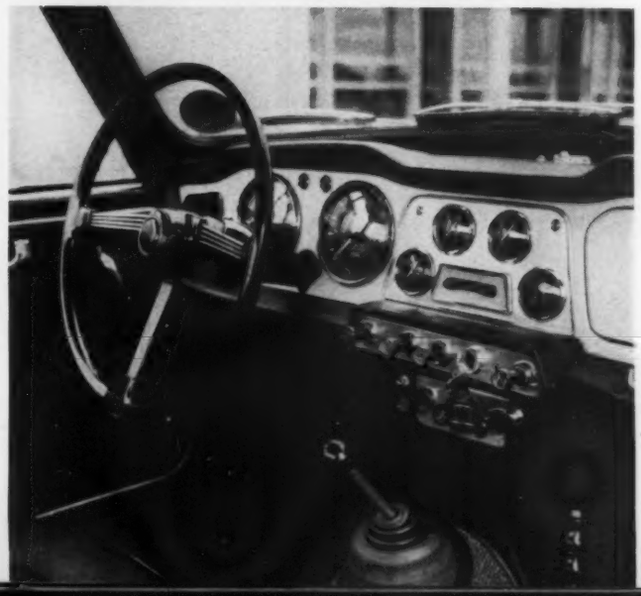
In hardtop form particularly, the TR-4, with its air of roominess, softened ride, roll-up windows, and generally civilized demeanor, marks a step away from *pur sang* sport car character and towards the G.T. concept. But classify it how you will, for lovers of high performance machinery it's the most important story to come out of England since the E-Type Jaguar. *–DM*



New hood opening retains excellent access of TR-3 around the basically unchanged engine. Genuine hood bulge clears the SU carburetors.



Rear, at upper right, of TR-4 is simple, with squared lines for maximum trunk capacity. Spare tire is now reachable through the main trunk lid.

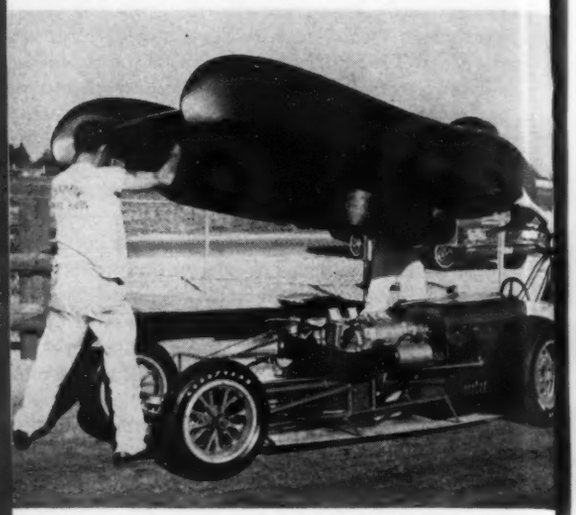


Cockpit retains traditional Jaeger dials but boasts new braced dashboard, padding, ashtray and arrangement of symbol-marked minor control knobs.

Mickey Thompson Bats .777!

by Wayne Thoms

Mighty Mickey Thompson, like an All-Star home-run king, blasted 14 hits out of 18 at-bats as he returned to the March Air Force Base ballpark with a strong team. His .777 average could have been higher but the game was called.



Quick accessibility as well as quick acceleration are featured on the Attempt. About eight Dzus fasteners hold the one-piece aluminum body made by Jim Burrell of Burbank.

Mickey stands proudly before his four record breakers. They are, left to right, Class F 2-cylinder; Class D and E Attempt, Class C Assault and Class B stock car.

► "I'm not going to need any leathers after today," said Mickey Thompson after one of his crew suggested that a white leather driving suit might look sharper than the traditional black he has worn during his world-record-setting speed runs of the past few years.

"May we quote you?" shouted a reporter.

"Of course. If we get all the records here today I'm through driving," replied Mickey who is, unofficially, the fastest man on wheels at 406.6 mph.

The time was Sunday, July 9; the place, March Air Force Base near Riverside, California, where Thompson was in the midst of the most ambitious attack on standing-start kilometer and mile acceleration records in the history of speed — trying for 18 International and American National records in five classes with four cars.

But the hot desert wind, gusting at 25 mph across the 2½-mile runway, finally made conditions so hazardous that Mickey called a prudent halt before getting all the marks he wanted. Consequently, he has not retired; at least he will be back for the missed Class D speeds.

As it was, he took home 14 out of the 18 records he sought — no small feat. And it is almost certain that had the wind not blocked him — he simply couldn't hold his last car in a reasonably straight line — he would have copped the other four.

Attacking this many records in a single day is hardly something one decides on the spur of the moment. It takes intensive preparation. Here is what Mickey brought with him to the SAC base: the Assault, a streamliner with open front wheels for Class C (the same car he used a year ago in setting similar Unlimited and Class B acceleration marks), the Attempt, a brand-new and startlingly beautiful streamliner with separate engines for Classes D and E, an unnamed open-bodied acceleration machine for Class F, and a stock Pontiac Catalina two-door for American National Class B. In all cases except the latter, taking the International kilometer and mile records also captures the equivalent American National record. There is no international class for closed stock sedans.

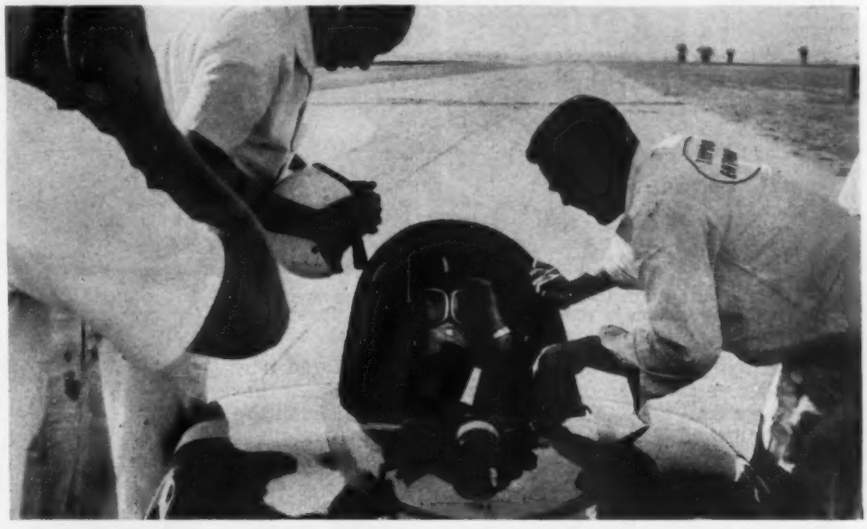
At 2 a.m. on Record Day Thompson moved his entourage into place on the airstrip. Immediately preceding he had put in a Saturday at his shop in last-minute preparation, had spent the late afternoon and evening managing a successful race meet at the Lions Associated Drag Strip in Long Beach and had driven the 60-odd miles to March AFB. When one considers that he had had no sleep that night, climbing into a succession of race cars and making it appear easy becomes something akin to a superhuman effort.

The United States Auto Club had been on the job since the day before, measuring the kilometer and mile to within one-inch accuracy. Under the supervision of Joe Petrali the USAC crew had installed timing lights and an office trailer and were ready for action.

Thompson's record technique involved first running the kilometer in one direction. At that point he could determine if a gear change would be advantageous; also, the crew changed oil and water at each stop and repacked the parachute. The second run was in the opposite direction for the kilometer and the mile. Finally, he was turned around and ran the standing mile in the direction he had driven his original kilometer — three runs to get a two-way average. If he failed at any point, he was permitted to start the sequence of runs over. Once begun, he had one hour to complete the tour, a limit rigidly enforced by USAC officials.

The first streaks of dawn were just thrusting over the mountains that ring March AFB as Mickey fired up the Attempt with the Class E engine installed. It crackled with life for a few moments, then silence. Trouble already, it seemed. As it turned out, the car was OK; the problem was merely one of selecting the proper spark plugs for existing conditions. But the car was pushed aside temporarily.

The Attempt is notable for its one-piece aluminum body fashioned by Jim Burrell, Burbank, California sheet metal wizard. The only blemish on its aerodynamic hide is an air intake for the supercharger. Standing 46 inces high, it is



The last piece of equipment — Thompson himself — is fastened into the cockpit of Attempt before its Class E record runs. Below, Class F records are smashed using a Tempest engine sawed in half. It develops some 300 bhp at 7000 rpm. The parachute and spot brakes stop the car.

156 inches long on a 96-inch Dragmaster trussed tubular chassis. Features common to each of the three cars include solid front axle with transverse torsion bars, rear axle suspended rigidly, Halibrand magnesium wheels, and Halibrand spot brakes on the rear wheels only. (Primary slowdown is from a drag parachute.) Class E power is derived from a Pontiac Tempest that has been sleeved down and destroked (3 9/16 x 3 inches) to 120 inches. As in all the engines (except the stocker) Mickey utilized much of the speed equipment he manufactures under the Mickey Thompson Enterprises label including cam, forged aluminum rods, pistons and blower drive kit for the GMC 3-71 supercharger. The engine cranks out an estimated 420 horses at 7400 rpm.

Next car wheeled out was the Class F machine, a fascinating exercise in sawing a Tempest in half, destroking ¼-inch, and ending with two cylinders (see C/D, September, 1961). At 6:21 he was off for the (*Continued on page 68*)

JUNKET REPORT: VW 1500

A jet flight to Germany at the behest of the Volkswagenwerke to view the new VW 1500 was the assignment handed Managing Editor Warren Weith. He accepted and spent ten days watching beetles being born and test-driving the next generation's "people's car".

M. E. Warren Weith notes increased luggage space in the latest from Wolfsburg. Modern lines of new 1500 (on same chassis dimensions) give higher headlight mountings, increased interior space, less drag, and less sensitivity to gusty side winds at cruising speed.

● A first trip to Germany to view a much-rumored new VW can be, and was, an exciting experience. The fact that we went by SAS DC-8C jet was just so much icing on the cake. Arriving in Hamburg, after six and a half food- and drink-filled hours, we boarded a Henschel diesel bus for the run across the flat countryside of northern Germany to the town of Wolfsburg. It only took a few miles in this conveyance to make the driver's *modus operandi* crystal-clear. His main article of faith seemed to be that you can drift a 32-seater as easily as a single-seater. On the two-lane roads leading to the Autobahn we were monarchs of all the wheeled traffic we surveyed. From a bus you can see around otherwise blind corners — an advantage our smiling driver used to the fullest while leaving windrows of VWs, motorcycles and motorscooters in our wake. Once on the superhighway — built in the late '30s, it is beginning to look and feel a little tired — most of the small ones we had passed earlier repassed, as they took advantage of higher top speeds and the absence of a legal limit.

Wolfsburg — "you know, where the beetles are born" — is an amazing town. It looms up unexpectedly among the small, neat farms, looking oddly out of place among the surrounding greenery. It is a town whose sole reason for being is the small, melon-shaped car that has become so familiar in this country over the last six years. Its population of 60,000 — 37,000 of whom work directly for Volkswagen — turn out 4000 vehicles a day in an ordered frenzy of labor that is only possible through the use of VW's secret weapon — the German worker.

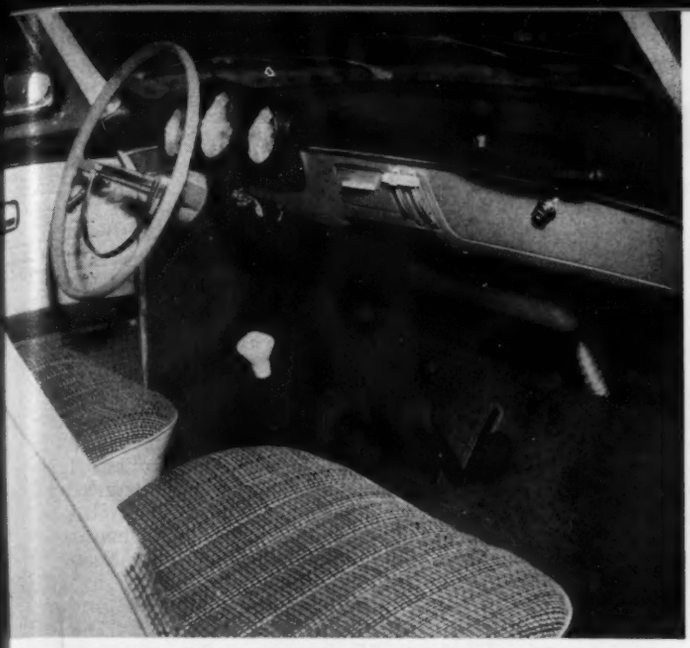
On arrival we were driven past the factory. It is separated from the town by a canal and is large measured by any yardstick you care to use, such as Chevrolet in the U.S. or B.M.C. in England. What makes it appear even larger is its isolation from other industrial activity. There it sits — 235 throbbing acres — way out in the country. After this initial view from the bus we were driven to various hotels in town and settled in by a corps of bilingual VW public relations men to await the morrow and our formal tour.

Up not so bright but early the next morning we were out to the Volkswagenwerk in the faithful — if not smooth-riding — Henschel bus. Our tour started at the skyscraper-sized administration building, with the huge glass doors being held open by two youngsters in navy blue pages' uniforms complete with gleaming silver buttons. First came a short talk by Heinz Nordhoff, the man who is responsible for Volkswagen's position in the world today. Using two large models of the factory — to show how it looked right after the war with 60 percent of it smashed by Allied bombings, and another illustrating how it looks today — Mr. Nordhoff quickly sketched the recent history of his company.

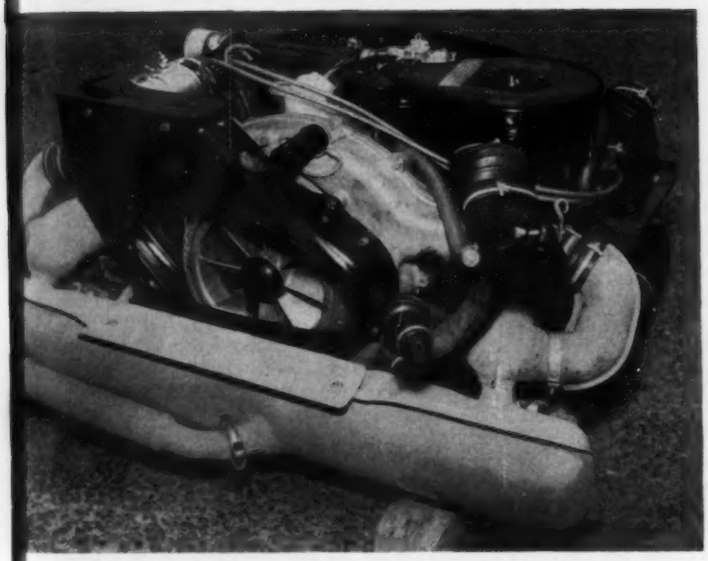
VW 1500 is tested in a full-sized wind tunnel before finalizing body shape. Entire program, including exhaustive testing on the company test track and the Nürburgring, was done in three years.

One little nugget from his speech: he touched on the fact that before the war he had worked six years for General Motors in the service department, and that it is no accident that VW sales have been based on a veritable cornucopia of spare parts and service. Nordhoff impressed with his pleasant, patient manner, especially with some of the more inane questions posed by the group. The economic epic that he has written on the northern plains of his war-shattered country took more than a pleasant manner — his singleness of purpose and will must be about as strong as one of the ball bearings in his cars.

After this well-handled introduction to the Volkswagen world we started on our trip through the plant. First



Interior on 1500 is well up to the firm's policy of quiet quality. Finger-pull door handles, hooded instruments, thick crash padding, extensive heating controls will prove a delight to old VW drivers.



New VW 1500 engine is an exercise in how to make a suitcase-sized power plant. Height was reduced by placing carburetor off to one side and also attaching the cooling fan directly to crankshaft.

Future 1500 owners may win a few dollars betting friends that they can't locate the engine. Space above flat four can be used for luggage. Cap on sill is neat oil filler-dipstick combination.

stop was the new press shop where giant cookie cutters clonked out sections of VWs with lugubrious ease, then to rear assembly, coach-work, final assembly and the test stands. The first question asked by anyone who has visited the VW plant is, "How do they manage to achieve such quality?" And the second — usually from the more cynical types — is, "Are they really built as well as everybody says they are?" A full answer to both questions would probably require a complete book — if not two. An answer in brief would run something like this:

On the question of quality, there are 3000 inspectors employed at Wolfsburg, or one for every 12 workers. The inspection department is a separate entity and it is difficult for line workers to become inspectors — they are hired right from the beginning as quality-control people. As to just how well the car is put together, all the workers are young — the average age in Wolfsburg is 37. They like to work, and they take a nationalistic pride in the work they do. Put all these things together and they spell VW.

Lunch in the executive dining room with its thick carpets, 30-foot ceilings and impeccably-set tables was of the same quality as the cars that were being loaded aboard railroad cars sitting on 25 sets of tracks just a few blocks away. Slightly groggy from unaccustomed amounts of wine — "Go easy, boy, it ain't Coke" — tamped down by huge amounts of food, we were taken to a test garage for a first view of the VW 1500.

The handling of the presentation of the new car left one feeling that the VW brass, never having had an all-new automobile to introduce, were not quite sure of their ground. The car was sitting all alone off to one side of the building and as we swarmed around kicking tires and slamming doors I couldn't help but notice the expressions on the faces of the various technical people standing by. They seemed to be thinking, "What are they doing to our baby?"

The car was white with light-colored plastic upholstery, and seemed smaller than what we had been led to expect from the early publicity pictures. The serial number on the car was 0000012, marking it as not quite a production model. Its styling was definitely not as radical as the classic VW must have been in its day. The 1500 would be difficult to pick out in a stream of modern European traffic. Whether this approach was intentional or not would be hard to say. We're sure, though, that the VW 1500's chunky, all-in-one-piece look will appeal to many, especially present Volkswagen owners.

On closer examination a number of little, but well thought out, details came to light. There is an automatic lock on the folding front seat backs. When the doors are closed the seats can't pivot forward. The tank for the standard-equipment windshield washer is located ahead of the spare tire in the front luggage compartment and is pressurized through a tire valve set in its cap. Thus when checking the spare you squirt a few pounds of air pressure into the tank and you're all set for pumpless window washing. The release for the rear deck lid is incorporated in the rear door post. With the door closed and locked no one is going to get at the luggage or the engine unless they've a cutting torch handy. There's a combined dip stick and oil filler built into the sill of the rear compartment, which makes checking the oil a white-glove no-flashlight operation. All of these little doodads, needless to say, are done with the usual VW fit and finish. Opening rear windows — a long-felt need by rear seat passengers in the old car — are not quite attained on the new model. The rear panes pivot open a few inches ala Porsche coupe — but don't roll down.

More important innovations concern the engine and front suspension. In order to place the powerplant below the rear trunk decking in a space just a little bigger than that required for a spare tire, VW engineers had to reduce the height of the 91-cubic-inch engine. This was done successfully — it measured no more than 15 inches from sump to air cleaner — by getting rid of the old cooling fan housing and setting the carburetor off to one side. Driving the fan from the rear of (*Continued on page 70*)

JUNKET REPORT: RENAULT R4

When Renault introduces a new model, it's properly done. To show Editor Karl Ludvigsen the long-rumored, long-awaited successor to the 4CV, they flew him to the Mediterranean coast for a three-day orgy of dining and driving. Now recovered, he has written this report.

The Editor appears happy as he steps aboard a deluxe-trim Renault R4L during the first day's get-acquainted session. All concerned had vast fun barreling these able cars over the twisty back roads.

● It seemed most seemly that I arrived at Air France's Idlewild terminal in my Citroën 2CV, a car of a kind I'd see most frequently in the week to come. There my trail merged with that of bearded Griff Borgeson, who was joining me and nine other journalists on a junket to examine an as-yet-unidentified Renault automobile at a spot tantalizingly known only as "X". To get there we clambered aboard a Boeing 707 which rushed us to the new air terminal at Orly, south of Paris. There Renault's patient and talented Jean-Claude Maroselli marshaled sufficient Dauphines and Fregates to chauffeur us and our bags of cameras and watches to a night's rest in Paris. So far, very good indeed!

Early next morning (after a breakfast of butter with the flaky-light *croissant* rolls that are entirely worth the price of a round-trip ticket) we Fregated again to Le Bourget airport and a chartered De Havilland DH104 "Heron". Seating only 14, this is the world's smallest four-engined transport. From my seat practically in the pilot's lap I hoped it was the sturdiest too, as we swung low above the island in the Seine with shore-to-shore factory that is Renault's Billiancourt plant. We climbed at 125 mph to a cruise altitude of 7000 feet at which 140 mph was maintained at 2200 rpm.

From our course of 170 degrees, from close looks at the almanacs and road maps being consulted by our pilots — and from hints dropped by those who had survived the first trip — we learned we were headed for Nimes, west of Marseilles on the Mediterranean coast of France. After our Heron throttled to a stop at the sunwashed Nimes airport we were met by Walt Woron (Renault, U.S.), Robert Sicot (Renault, world) and Boris the bartender, an invaluable Renault asset who instantly set about quenching our thirsts with familiar potions. Here we asked Bob Sicot what Renault intended for the new model we had not yet seen. "It's for our home market, of course," he replied, "but also especially for underdeveloped countries — Africa, the Near East and the like. America? It doesn't sound like it, does it? But we've asked you here to get to know the car and then tell us what you think about that."

Our next transport was the versatile, fine-handling, front-drive Renault Estafette van which ground-lifted us to our unique hotel at Saint Marie By-The-Sea. In watery surroundings conquered by gravel and wooden bridges, we each occupied a small cottage with a thatched and whitewashed exterior and an entirely modern and cozy interior. By hurtling headlong through the many courses we were all able to put lunch aside by 3:30 p.m., when we set off to see the new car.

As our Estafettes neared Renault's stable-turned-garage (also in the local whitewashed style) gray covers were whisked off a row of vehicles by a crew of tanned, sombreroed mechanics. These, in a selection of warm and cool pastel colors, were early production prototypes of Renault's new R4. From its high-tailed, pug-faced stance it was evident at once that this was a simple, practical device intended to travel anywhere economically with or without roads but with more style inside and out than cars like this have ever offered before.

Unchanged except for its manifolding, the 747 cc engine of the now-abandoned 4CV Renault lives on behind the driven front wheels of the R4. Adoption of front drive for this car makes Renault the only firm in the world that concurrently builds all three basic types: front engine, rear drive (Fregate); rear engine, rear drive (Dauphine), and front engine, front drive (Estafette and R4). It's appropriate here as it completely clears the underbody of the car of all drive lines or control elements.

The R4 is unlike all other small-engined front-drive cars in having its engine behind the front wheels in the manner of bigger machines like Cord or Citroën. Internally, this substitutes a protrusion in the center of the firewall for two protrusions at the sides (for the wheels). This layout was adopted, according to Renault, to minimize changes in weight distribution between unladen and fully-laden conditions. In actuality the R4 carries 57 percent of its weight on the front wheels with driver alone on board, 56 percent with two occupants, and 44 percent with four aboard and 220 pounds of baggage. Also, the drive shafts to the front wheels are angled rearward to allow the inner wheel on a corner to lock over a tight 41 degrees to produce a remarkable 28-foot turning diameter. This shaft angle mates well with the present layout; it would have pushed a front-mounted engine impossibly far out ahead of the wheels.

At their outer ends the drive shafts have double-Hooke-type constant-velocity joints with permanently lubricated needle bearings; the inner joints are also c.v. but ball-type by Bendix-Weiss with lubricant sealed in by a protective rubber bellows. Drive originates at an all-new three-speed gearbox-final-drive unit of very small size and of the low weight of 37 pounds. The whole engine-box assembly, in fact, weighs only 230 pounds.

In its simplest version the new car weighs only 1190 pounds dry, actually 66 pounds less than the much less roomy 4CV it replaces (the deluxe R4L version weighs

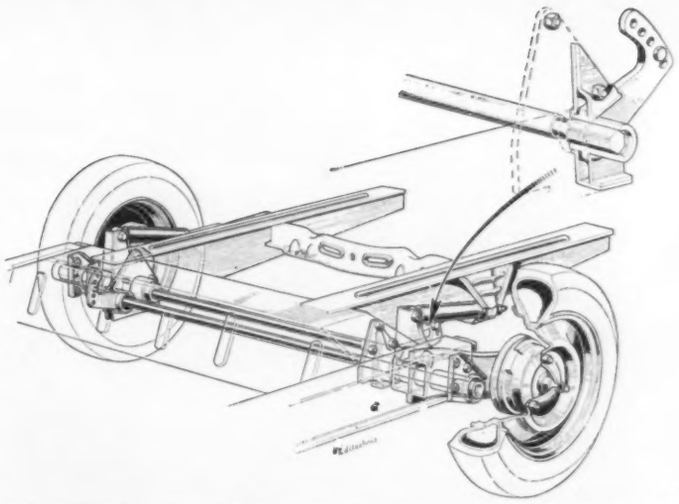
Editor and his henchman, typical outdoorsman Griff Borgeson, felt this simple R4 interior better suited the car's character and use than the deluxe trim. Shin-level shelves are handy for packages.

exactly the same as the 4CV). Thanks are owed the simple box-section platform frame to which all the external body panels are bolted for service ease. Much of the body area is hinged, in the form of four passenger doors and one upswinging door in the rear of the wagon-like squared body. The flat platform it exposes can quickly and usefully be enlarged by removing the rear seat.

As on the 2CV Citroën, the R4 Renault's seats are an amalgam of rubber and cloth in tension over a tubular frame; in this case there's some additional cushioning. The cockpit is dominated by the vertical black plastic heater housing, which blends with a reinforced-plastic dash capping. The latter is pierced by two fresh-air ducts which are covered by hinged doors to control air exit and fed by a single closeable cowl scoop. This scoop also feeds fresh air to the comprehensive heater, proved adequate in Renault's testing grounds in Canada and northern Minnesota.

Wonderful ventilation is supplied by an optional opening roof which can be rolled up — in a rather complex way — from front or rear or both. Air also can enter through the sliding front door windows. The new Renault is available both in standard R4 trim and in a more deluxe R4L version; a salient feature of the latter is a pair of openable rear quarter windows where the R4 has only sheet metal. The R4L also boasts hubcaps, exterior chrome grille and side trim, a two-spoke steering wheel, some added accessories and more elaborate interior paneling.

Under this honest shell is all-independent suspension by torsion bars. The front layout is conventional with wishbones and fore-aft torsion bars in the Chrysler manner; total front wheel movement is an impressive 8¾ inches. Rear wheels are guided by trailing arms restrained by transverse torsion bars which allow a full foot of wheel travel. To save space the Allinquant telescopic shocks are placed horizontally at the back; special valving was needed to allow them to work properly in the prone position. Directional stability is enforced by a 0.55-inch front anti-roll bar and by a centering spring in the rack-and-pinion steering box.



Rear suspension uses offset transverse torsion bars and trailing arms of equal length, making wheelbase longer on right than left! Front and rear bar abutments have several height adjustment holes.

Rubber bushings and sealed ball joints in the front end unite with the lubed-for-life universal joints to render the R4 chassis completely lubrication-free. Besides checking tires, brake fluid and the battery, the only maintenance required is an engine oil change every 3000 miles and gearbox oil (*Continued on page 71*)

R4L with optional cloth roof looks like this all opened up. This roof is especially valuable on the R4, which lacks openable rear windows. A special two-part rear door will also be an option. Access to engine and drive unit is extremely quick and complete.

300 BEAUTIFUL BRUTE Part 3

Front end of experimental car No. 613, at top, was transferred to the 1957 300C, above, but the rear fenders seem to have inspired that year's Plymouth.

by Bill Carroll

Technicalities like torsion bars, fuel injection, four-speed boxes and Ram Induction enhanced the appeal of the last five series of Chrysler's thundering 300.

► When the opportunity came to style the 300 series, along with redesigned 1957 Chryslers, a unique experimental car was used as a point of departure. Called Number 613, it had bucket seats, control console dividing the passengers, woven leather upholstery, and a frontal design that fairly shouted of power. This car, Virgil Exner's personal concept of a man's "sports car", sparked the unique 300 of 1957. As one stylist told CAR AND DRIVER, "The theme of our '57 was so successful it influenced the styling of every 1960 Chrysler-built car."

The wholly new "C" featured a hood, grill, trim and ornamentation unique to the 300 series, but straight from No. 613. The body shell was Chrysler New Yorker, to reduce production costs. An interesting change on the 300C was abandonment of the 1955-56 checkered flag motif for a red, white and blue "300C" medallion on the rear quarter panel, deck lid and steering wheel. According to a Chrysler release, "It is intended to remind people that this is truly an American car. We use the circle because what makes a car different from a boat or plane is the circle or wheel."

Handling of the 300C was improved considerably by introduction of torsion-bar front suspension. Rear leaf springs were softened from the previous year's 160 pound/inch to 135 pound/inch. This was still 30 percent stiffer than the 1957 Chrysler New Yorker. On the beach at Daytona, Florida in February, 1957, Red Byron ran a 300C through the measured mile at 134.108 mph. This didn't break Tim Flock's 1956 record of 139.373 mph in a 300B.

Unknown to onlookers at the beach, Chrysler was testing a 1958 engine, with Bendix fuel injection, hidden in a white

1957 body. Unfortunately engineers had so much fun "dragging" with the car that by the time it reached the beach, for a go at the flying mile, the clutch was gone. It started down the sand, driven by Vicki Wood. At 120 miles per hour the clutch let loose and 390 horsepower took off like a jet. Vicki shut off and coasted through the clocks, crying like a baby at the car's failure. Later she used a stock 300C, complete with record player and automatic transmission, to hit 138.985 in a single southbound run.

1957 models of other Chrysler divisions were taking a lead from the 300. Plymouth was in its second year of the Fury, with a maximum-horsepower engine on heavy-duty suspension. DeSoto was offering the Adventurer, and Dodge a D500. But success was Chrysler's, for though 1957 production was delayed until December of 1956, sales totaled 2188 units, the record 300 production to date.

June of 1957 found all Detroit on its heels from a resolution of the Automobile Manufacturer's Association. The resolution retired speed and performance from automobile merchandising and eliminated open factory participation in stock car racing. A few months later, when the 1958-model 300D appeared, there was little talk of speed or performance. Chrysler publicity was limited to mentioning that previous 300 engines had been most successful at Le Mans, Watkins Glen, Bonneville, and Indianapolis (where engine development began in 1952). From a specification standpoint the "D" was only slightly altered over 1957 models. The hardened crankshaft was replaced by a standard drop-forged unit, the cam was modified to smooth the idle and optional axle ratios were cut from thirteen to five.

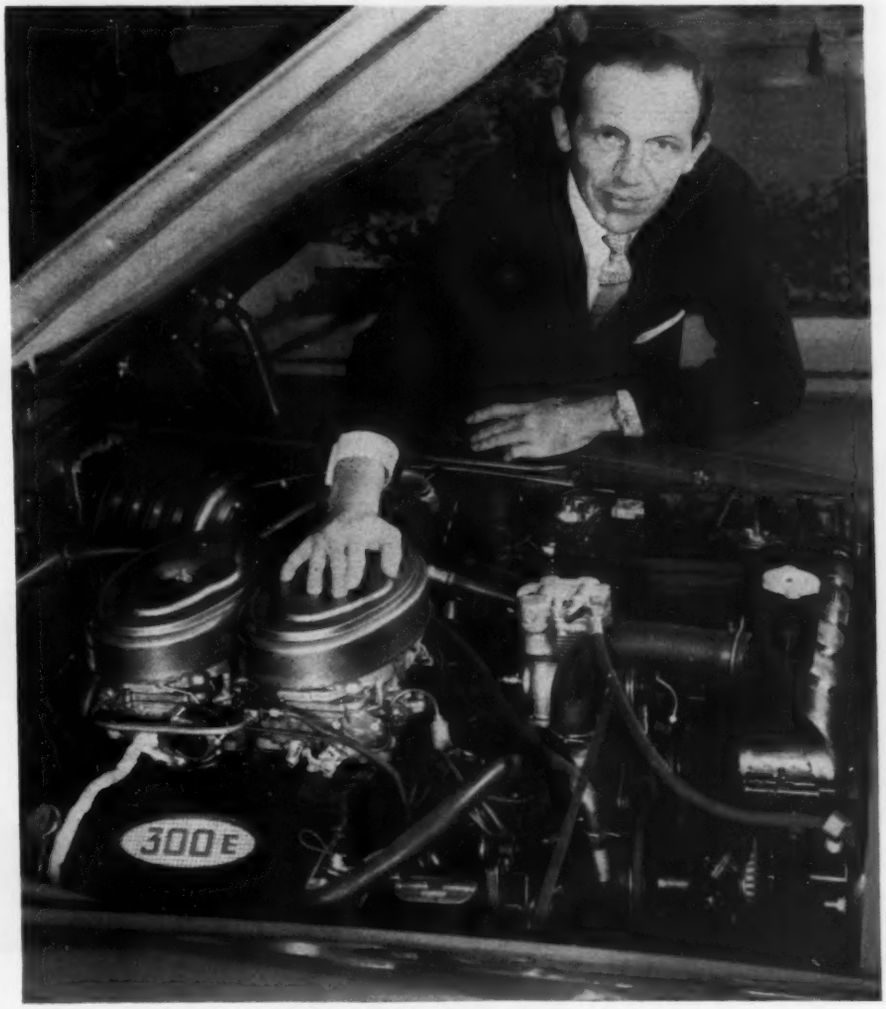
Big "D" news of 1958 was a new fuel system adapted, after four years of testing, from the "Bendix Electrojector." This extra-cost ($400) feature on 300Ds was intended to compete with injection systems offered by Chevrolet and Pontiac. Chrysler's Bendix system metered fuel, at constant pressure, to a point upstream of the intake valves by solenoid operated "ejector" valves. Though the injection provided 15 more horsepower than carburetion, it was something less than a sensational success because of excessive complication. As far as we know, few Electrojectors are still in use. Most were removed long ago by unhappy owners and replaced with carburetor equipment. Even today, Chrysler engineers are reluctant to discuss their fuel injection experiences.

The only styling change made to the 300D was addition of hubcap identification and elimination of a wind-fouling lip above the windshield. Manual steering became an extra-cost option! Only 761 "D"s were built.

The 1959 Chrysler 300E continued a trend, begun in 1957, of minor modifications to body trim and interior. The heavy hemispherical-head Fire-Power engine was dropped, but horsepower was still provided (380 at 5000 rpm) by a new 413-cubic-inch engine of 4.18 by 3.75 inches. Styling changes were limited to new hubcaps, deck lid, tail-lights and shifting of the rear quarter panel identification to a new position ahead of the wheel cut-out.

Though Chrysler advertising claimed the "E" would "drag" previous 300s, the 300E was a calm car which produced a host of unhappy letters from buyers who found its performance less than stimulating. As one Chrysler executive recalls, "In 1959 we used the same formula because we felt the car was unique and didn't need drastic modification." How wrong he was is underscored by records that show only 647 "Es" were built, a far cry from the 2188 "Cs" of 1957.

Ram Induction, a four-speed transmission and unitized body were new in 1960 Chrysler 300F models. Specifications list the rammed 413-cubic-inch engine at 375 horsepower at 5000 rpm. The optional high-performance engine of 400 horsepower, offered only with the four-speed box, used a wild cam and optional head with exhaust valves of 1.74 inches diameter, compared to 1.60-inch valves in the standard head.



Bob Rodger, father of the 300, almost killed off his creation with the low-suds 300E. The original hemispherical-head engine was dropped for a new layout that performed on paper but not on the road.

Interior-wise the 300F sported bucket seats, a gamble the corporation felt it could make on low-volume 300s. The console control from "Experimental Car 613" was moved into the "F". A tachometer almost hidden under the dash was added because of customer preference, though engineers did not consider it useful with automatic-transmission cars. This was the first year 300s were pulled off the production line to install interior trim.

The four-speed manual transmission, an option in 1960, was built by Pont-à-Mousson, in France. Unfortunately Chrysler didn't know until they'd specified the transmission that the French factory might have difficulty building a profitable number of (*Continued on page 34; chart overleaf*)

CHRYSLER 300 SPECIFICATIONS

DATE	MODEL	300 PRODUCTION	WHEELBASE	MAX. TREAD	LENGTH	WIDTH	BORE X STROKE	CUBIC INS.	COMPRESSION RATIO	HORSEPOWER @ RPM	TORQUE @ RPM	CARBURETION	INTAKE DIA INCHES	INTAKE OPEN BTDC	INTAKE CLOSE ABDC	EXHAUST DIA INCHES	EXHAUST OPEN BBDC	EXHAUST CLOSE ATDC	LIFTERS	CRANKSHAFT	RADIATOR	EXHAUST	CLUTCH DIA. INCHES	MANUAL RATIOS	AUTOMATIC RATIOS	DRIVE SHAFT DIA. INCHES
1953	"HEAVY DUTY"		126.5	59.6	211	76.7	3.81 x 3.63	331.1	8.5	235 @ 4400	330 @ 2800	DUAL-QUAD	1.94	30°	70°	1.75	60°	30°	ROLLER	FORGED	26 QT.	DUAL	9.5	UNK.	1.72 1.00	3
	NEW YORKER		126.5	59.6	211	76.7	3.81 x 3.63	331.1	7.5	195 @ 4400	320 @ 2000	DUAL	1.94	15°	57°	1.75	48°	15°	HYDRO	FORGED	26 QT.	SINGLE	N.A.	N.A.	1.72 1.00	3
1954	"OPTIONAL EQUIPMENT"	15	125.5	59.6	211	76.7	3.81 x 3.63	331.1	8.5	235 @ 4400	330 @ 2800	QUAD (ELEC. FUEL PUMP)	1.94	30°	70°	1.75	60°	30°	ROLLER	FORGED	26 QT.	DUAL	9.5	UNK.	1.72 1.00	3
	NEW YORKER DELUXE		125.5	59.6	211	76.7	3.81 x 3.63	331.1	7.5	195 @ 4400	320 @ 2000	DUAL	1.94	15°	57°	1.75	48°	15°	HYDRO	FORGED	26 QT.	DUAL	N.A.	N.A.	1.72 1.00	3
1955	CHRYSLER 300	1092	126.0	60.2	218	79.1	3.81 x 3.63	331.1	8.5	300 @ 5200	345 @ 3200	DUAL-QUAD	1.94	32°	68°	1.75	65°	32°	SOLID	FORGED	26 QT.	DUAL	N.A.	N.A.	1.72 1.00	3
	NEW YORKER DELUXE		126.0	60.2	218	79.1	3.81 x 3.63	331.1	8.5	300 @ 4600 340 or	340 @ 2800 355 or	QUAD	1.94	15°	57°	1.75	48°	15°	HYDRO	FORGED	26 QT.	DUAL	N.A.	N.A.	1.72 1.00	3
1956	300B	1040	126.0	60.4	222	78.8	3.94 x 3.63	354.	9.0 or 10.0	340 @ 5200	355 @ 3400	DUAL-QUAD	1.94	35°	62°	1.75	62°	26°	SOLID	FORGED AND HARDENED	26 QT.	DUAL	OPTION 11	2.50 1.68 1.00	1.72 1.00 MODIFIED	3.5
	NEW YORKER		126.0	60.4	221	81.0	3.94 x 3.63	354.	9.0	280 @ 4600	380 @ 2800	QUAD	1.94	15°	57°	1.75	48°	15°	HYDRO	FORGED	26 QT.	DUAL	N.A.	N.A.	1.72 1.00	3
1957	300C	2148	126.0	61.3	219	78.8	4.00 x 3.90	392.	9.25 or 10.0	375 or 390 @ 5000	420 or 430 @ 4000	DUAL-QUAD	2.00	32° 30°	62° 56°	1.75	68° 66°	28° 30°	SOLID	FORGED AND HARDENED	26 QT.	DUAL	OPTION 11	2.31 1.58 1.00	2.45 1.45 1.00 MODIFIED	3.5
	NEW YORKER		126.0	61.3	219	78.8	4.00 x 3.90	392.	9.25	325 @ 4600	420 @ 2800	QUAD	2.00	15°	57°	1.75	57°	15°	HYDRO	FORGED	26 QT.	DUAL	N.A.	N.A.	2.45 1.66 1.00	3
1958	300D	761	126.0	61.2	220	79.6	4.00 x 3.90	392.	10.0	380 @ 5300	435 @ 3600	DUAL QUAD OR FUEL INJ.	2.00	32°	64°	1.75	73°	23°	SOLID	FORGED	26 QT.	DUAL	OPTION 11	2.31 1.58 1.00	2.45 1.45 1.00 MODIFIED	3.5
	NEW YORKER		126.0	61.2	220	79.6	4.00 x 3.90	392.	10.0	345 @ 4600	450 @ 2800	QUAD	2.00	15°	57°	1.75	57°	15°	HYDRO	FORGED	25 QT.	DUAL	N.A.	N.A.	2.45 1.45 1.00	3.25
1959	300E	647	126.0	61.2	221	79.5	4.13 x 3.75	413.	10.0	380 @ 5000	480 @ 3400	DUAL-QUAD	2.06	20°	60°	1.80	60°	22°	HYDRO	FORGED	17 QT.	DUAL	N.A.	N.A.	2.45 1.45 1.00 MODIFIED	2.75
	NEW YORKER		126.0	61.2	221	79.5	4.13 x 3.75	413.	10.0	350 @ 4600	470 @ 2800	QUAD	2.06	15°	57°	1.80	57°	15°	HYDRO	FORGED	17 QT.	DUAL	N.A.	N.A.	2.45 1.45 1.00	2.75
1960	300F	1160	126.0	61.2	219	79.4	4.13 x 3.75	413.	10.0	375 or 400 @ 5000	405 @ 2800 or 465 @ 3600	DUAL QUAD + RAM	2.06	20° 28°	68° 76°	1.60 or 1.74	80° 74°	28° 30°	SOLID OR HYDRO	FORGED	17 QT.	DUAL	OPTION 11	3.35 1.96 1.36 1.00	2.45 1.45 1.00 MODIFIED	2.75
	NEW YORKER		126.0	61.3	219	79.4	4.13 x 3.75	413.	10.0	350 @ 4600	470 @ 2800	QUAD	2.06	15°	57°	1.80	57°	15°	HYDRO	FORGED	17 QT.	DUAL	N.A.	N.A.	2.45 1.45 1.00	2.75
1961	300G	1280 (EST.)	126.0	61.3	220	79.4	4.13 x 3.75	413.	10.0	375 or 400 @ 5000	405 @ 2800 or 465 @ 3600	DUAL-QUAD + RAM	2.06	20° 28°	68° 76°	1.60 or 1.74	80° 74°	28° 30°	SOLID OR HYDRO	FORGED	17 QT.	DUAL	OPTION 11	2.31 1.58 1.00	2.45 1.45 1.00 MODIFIED	2.75
	NEW YORKER		126.0	61.3	220	79.4	4.13 x 3.75	413.	10.0	350 @ 4600	470 @ 2800	QUAD	2.06	15°	57°	1.80	57°	15°	HYDRO	FORGED	17 QT.	DUAL	N.A.	N.A.	2.45 1.45 1.00	2.75

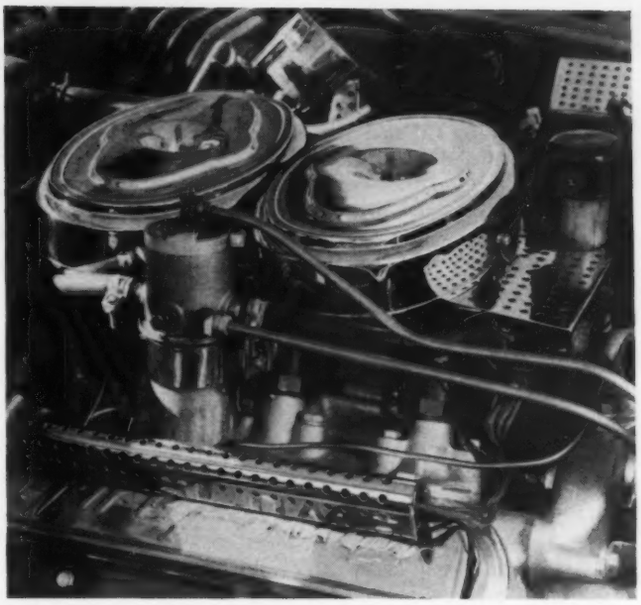
From a technical standpoint, 300s have advanced far from the "Heavy Duty" equipment for the 1953 New Yorker. These first engines had roller tappets, intake valves 1.94 inches in diameter and exhaust valves of 1.75 inches diameter. With a dual exhaust system, disc brakes from the Imperial, stabilizers front and rear and "Airlift" suspension supports, they were among the first modern American road racing sedans. The cam used in the '53 and '54 engines had the intakes open for 280°, exhaust valves open 270° with a 60° overlap. In 1954 specifications of 1953 models were retained, though in some cars hydraulic lifters replaced roller tappets and cam duration was reduced. A single quad carburetor and electric fuel pump was the major change between the 1953 and 1954 "hot" Chryslers. An additional optional axle ratio was added, making a total of four. Disc brakes were dropped for Chrysler drums of similar area.

The first Chrysler 300 (the C-300 series of 1955) was changed in wheelbase, width and length from previous years. The engine was boosted to 300 horsepower at 5200 rpm by dual-quads and for the first time was fitted with special tri-metal rod and main bearings. Solid lifters and a cam of entirely new configuration completed power plant changes. The previous year's brakes were retained, with front and rear springs stiffened. Only the front suspension had an anti-roll bar. Two rear axle ratios were optional.

The 1956 300B had optional quick steering and slightly more weight. Horsepower output depended upon compression ratio and camshaft fitted to the slightly larger engine. Bore was increased from 3.18 to 3.94 inches, while stroke remained the same. To reduce crankshaft problems found during the 1955 racing season, 1956 engines had a forged and hardened crank. Solid lifters and the 1955 camshaft were retained. The new three-speed automatic transmission was highly modified and an optional manual transmission offered. Brakes were enlarged and the drive shaft diameter increased. Spring rates were carried over from 1955 and twelve rear axle ratios were offered.

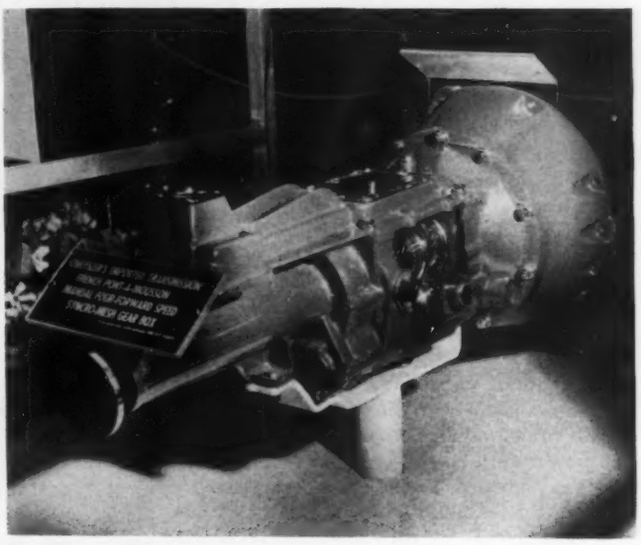
The 300C, of 1957, had the new 200-pounds-heavier "Forward Look" body on the same wheelbase as previous 300s. The engine of the "C" was enlarged to 392 cubic inches, and optional compression ratios provided either 375 or 390 horsepower. As in the preceding year, tri-metal bearings were used on a forged and hardened crankshaft and solid lifters were standard with a choice of two camshafts. One shaft was that used in "B" engines; the other was a milder grind close to that in 1957 New Yorkers. Intake valves were increased from 1.94 (of the "B" model) to 2.0 inches in diameter. Exhaust valves remained at 1.75 inches. The optional manual transmission was available, though the modified Torque-Flite automatic

DRIVE SHAFT DIA. INCHES	AXLE RATIOS	BRAKE AREA SQ. INS.	TIRES	STEERING RATIO	WHEEL TURNS	WEIGHT	SUSPENSION TYPE AND RATE LBS INCH FRONT	REAR	STABILIZER FRONT	STABILIZER REAR	IGNITION
3	3.07-3.36 3.54	310 (DISC)	8.00 x 15	20.8	5.5	3935	COIL PLUS	LEAF "AIRLIFTS"	YES	YES	6 V. DUAL BREAKER
3	3.55	281	8.00 x 15	20.8	5.5	3945	COIL 550	LEAF 100	YES	YES	6 V. DUAL BREAKER
3	3.07-3.36 3.54-3.73	310 (DISC)	8.00 x 15	16.2	3.0	3955	COIL PLUS	LEAF "AIRLIFTS"	YES	YES	6 V. DUAL BREAKER
3	3.36	281	8.00 x 15	20.8	5.5	3965	COIL 550	LEAF 100	YES	YES	6 V. DUAL BREAKER
3	3.36-3.54 3.73-3.91-4.1	281	8.00 x 15 SPECIAL	20.4	5.5	4160	COIL 600	LEAF 100	YES	NO	6 V. DUAL BREAKER
3	3.36	281	8.00 x 15	20.4	5.5	4180	COIL 480	LEAF 150	YES	NO	6 V. DUAL BREAKER
2.5	3.07-3.36-3.54 3.73-3.91-4.1 4.3 -4.56-4.89 5.38-5.83-6.17	281	8.00 x 15 SPECIAL	20.4 OR 16.2	5.5 OR 3.5	4145	COIL 600	LEAF 100	YES	NO	12 V. SINGLE BREAKER
3	3.07-3.36	281	8.00 X 15	20.4	5.5	4110	COIL 480	LEAF 95	YES	NO	12 V. SINGLE BREAKER
2.5	2.93-3.15-3.36 3.54-3.73-3.91 4.1-4.3-4.56-4.89 5.38-5.83-6.17	281	9.00 x 14 SPECIAL	20.4	5.5	4360	TORSION BAR 165 (WHEEL)	LEAF 135	YES	NO	12 V. DUAL BREAKER
3	2.93	281	9.00 x 14	16.3	3.3	4315	TORSION BAR 115 (WHEEL)	LEAF 90	YES	NO	12 V. DUAL BREAKER
2.5	2.93-3.15 3.31-3.54 3.73	281	9.00 x 14 SPECIAL	15.7	3.5	4485	TORSION BAR 170 (WHEEL)	LEAF 135	YES	NO	12 V. DUAL BREAKER
2.75	2.93-3.15	281	9.00 x 14	15.7	3.5	4305	TORSION BAR 115 (WHEEL)	LEAF 90	YES	NO	12 V. DUAL BREAKER
2.75	2.93-3.31	281	9.00 x 14 SPECIAL	15.7	3.5	4440	TORSION BAR 170 (WHEEL)	LEAF 120	YES	NO	12 V. DUAL BREAKER
2.75	3.31	281	9.00 x 14	15.7	3.5	4275	TORSION BAR 115 (WHEEL)	LEAF 90	YES	NO	12 V. DUAL BREAKER
2.75	2.93-3.15 3.23-3.31 3.54-3.73	281	9.00 x 14 SPECIAL	15.7	3.5	4470	TORSION BAR 175 (WHEEL)	LEAF 135	YES	NO	12 V. DUAL BREAKER
2.75	2.93	281	9.00 x 14	15.7	3.5	4295	TORSION BAR 115 (WHEEL)	LEAF 90	YES	NO	12 V. DUAL BREAKER
2.75	2.93-3.23 3.54-3.73	281	9.00 x 15 NYLON 6-PLY	16.7	3.5	4900	TORSION BAR 175 (WHEEL)	LEAF 135	YES	NO	12 V. DUAL BREAKER
2.75	2.93	281	8.00 x 14	15.7	3.5	4085	TORSION BAR 115 (WHEEL)	LEAF 90	YES	NO	12 V. DUAL BREAKER



Bendix "Electrojection" saw its only production application on the 1958 300D and on several other high-performance Chrysler cars that season.

TYPOND



Four-speed Pont-a-Mousson gearbox was originally fitted to Chrysler V8 by Facel-Vega, probably prompting extremely limited use on the '60 300F.

was standard. This was the first year of torsion bars, which improved front suspension considerably. Rear springs, though softened from preceding 300s, were still about 30 percent firmer than springs under 1957 Chryslers. Thirteen rear axle ratios were available for 1957 "C" models. Tire section size went up and wheel size dropped from 15 to 14 inches.

In 1958 the 300 was slightly modified into a "D" model. Changes included 130 pounds additional weight and elimination of an optional-compression head. Horsepower ratings, 380 or 390, depended on ordering the dual-quad installation or Bendix fuel injection. Continued were special tri-metal bearings, but the forged and hardened crankshaft was eliminated. The camshaft was slightly less radical than that of 1957.

Unhappy 300 was the "E", released in 1959. Though it continued physical specifications of previous years, it contained an entirely new engine. This powerplant no longer used special tri-metal bearings, hydraulic lifters were standard and a new camshaft of extremely mild proportions was stock. Though intake valves increased in diameter from 2.00 to 2.08 inches, exhaust valves shrank to 1.60 inches. Use of dual-quads was continued and fuel injection dropped. A manual transmission was no longer available, as the modified Torque-Flite was standard, and drive shaft diameter was reduced. All suspension, mechanical, and brake components were continued from the 1958 "D", but optional rear axle ratios disappeared. The "E" ratio was 3.31 to one. As one result of elimination of performance modifications, Chrysler sold fewer "Es" than any other 300.

Chrysler returned to performance options in 1960, when they produced the "F" with a wholly new unitized body. Wheelbase, exterior, interior, and weight were similar to previous 300s, but it was quite a different vehicle. The 413-cubic-inch engine continued, with hydraulic or solid lifters optional. An optional head had high-performance 1.74-inch exhaust valves. Standard dual-quad carburetion was the new "Ram Tune" layout which showed outstanding midrange performance. 1960 was also the year of the four-speed French transmission which offered much, but proved so hard to find. Suspension and brakes were unchanged. Six axle ratios became available in 1960.

The 300G, announced for 1961, continues almost unchanged a pattern established with the "F". Engine, camshaft and valve options are identical to the preceding year. The only difference in options is a reduction in number of available axle ratios. The four-speed French transmission has been replaced with an optional Chrysler-built heavy-duty three-speed unit. Fifteen-inch wheels are standard to improve brake cooling and handling.

units. It is reliably reported that the Chrysler Division lost money on every four-speed transmission sold with the 400-horsepower engine. The loss came from custom work necessary to alter the floor pan and provide a shift quadrant for the four-speed unit. Estimates are that of 1160 Chrysler 300Fs sold in 1960, only about 15 were equipped with the four-speed manual option.

Exterior 1960 design included a dummy wheel cover on the trunk lid which was promptly hooted off succeeding models by purist 300 owners who objected to tricky decorative treatment. The "F" grille became a large black circle of air to cool the "hot" engine, with a cross in the circle to give the grille stability. Otherwise it was the same body shell as the Chrysler New Yorker. Cliff Voss, of Chrysler styling, says, "People buy this car for identity and appearance of performance. We made a unique break-up of 1960 interiors through bucket seats to maximize comfort, eliminated ornamentation on the outside and provided a grille that looks like the thing it does (cool the engine) with a cross in the center tying things together."

For 1961 the latest 300 is a "G" which carries on Chrysler's tradition of considered modification and improvement to update styling and performance each year. The "G" returns to 15-inch wide-base wheels (exclusive to the 300 series) for better brake cooling and handling qualities. Engine and mechanical options offered in 1960 are continued as is the Torque-Flite Automatic.

Replacing the French four-speeder is a heavy-duty three-speed manual transmission which was under development in 1958, though not ready for production until the 1961 Chrysler 300G. Engineers say the reason for offering a heavy-duty transmission in the 300 series is the flow of letters from 300 owners who claimed a manual gearbox would give them a feeling of mastery over the vehicle.

Production of today's 300, though done in conjunction with Chrysler cars, entails much skilled hand work. The 300 powerplant comes to life as a Chrysler New Yorker engine, built on the "engine line." Like all Chrysler engines it is "hot tested" by running on natural gas (twice as long as other engines) while being flushed with clean oil. Each 300 engine is then taken off the line and parts peculiar to the 300, such as special camshaft or solid lifters are installed, with manifold, coils, and other unique equipment. This "base engine assembly" is given another "hot test" and sent to the Jefferson Avenue assembly plant of the Chrysler Corporation.

Here, it is stocked in an "off-line" area where assigned mechanics mount 300 carburetors, which come from the vendor calibrated for maximum performance. Starter, alternator, and modified Torque-Flite or manual transmissions are also attached to the engine. Modified automatic transmissions used under 300s have line pressure upped from 90 psi to 105, with a special governor to lower upshift speeds. Though serial numbers differ from standard transmissions, each 300 transmission is daubed with blue paint to make sure it is used only under 300s. Every 300 engine goes through a special "make-ready" operation for carburetor linkage and idle adjustment. For decorative purposes, ram tubes on 400-horsepower engines are painted red and the block black.

Assembly of a 300 begins by mounting the engine on a fore-structure, consisting of a stub frame and heavy-duty front suspension members. Rear axle and suspension are cradled on carriers a specified distance from the front assembly. A modified Chrysler New Yorker shell, which has been trimmed with 300 headlining, windcord, door trim, and instruments, with attached fenders, grill, hood and ornamentation, is lowered over the front and rear assemblies. Special fender shields which clear the 300 engine are installed after the "body drop."

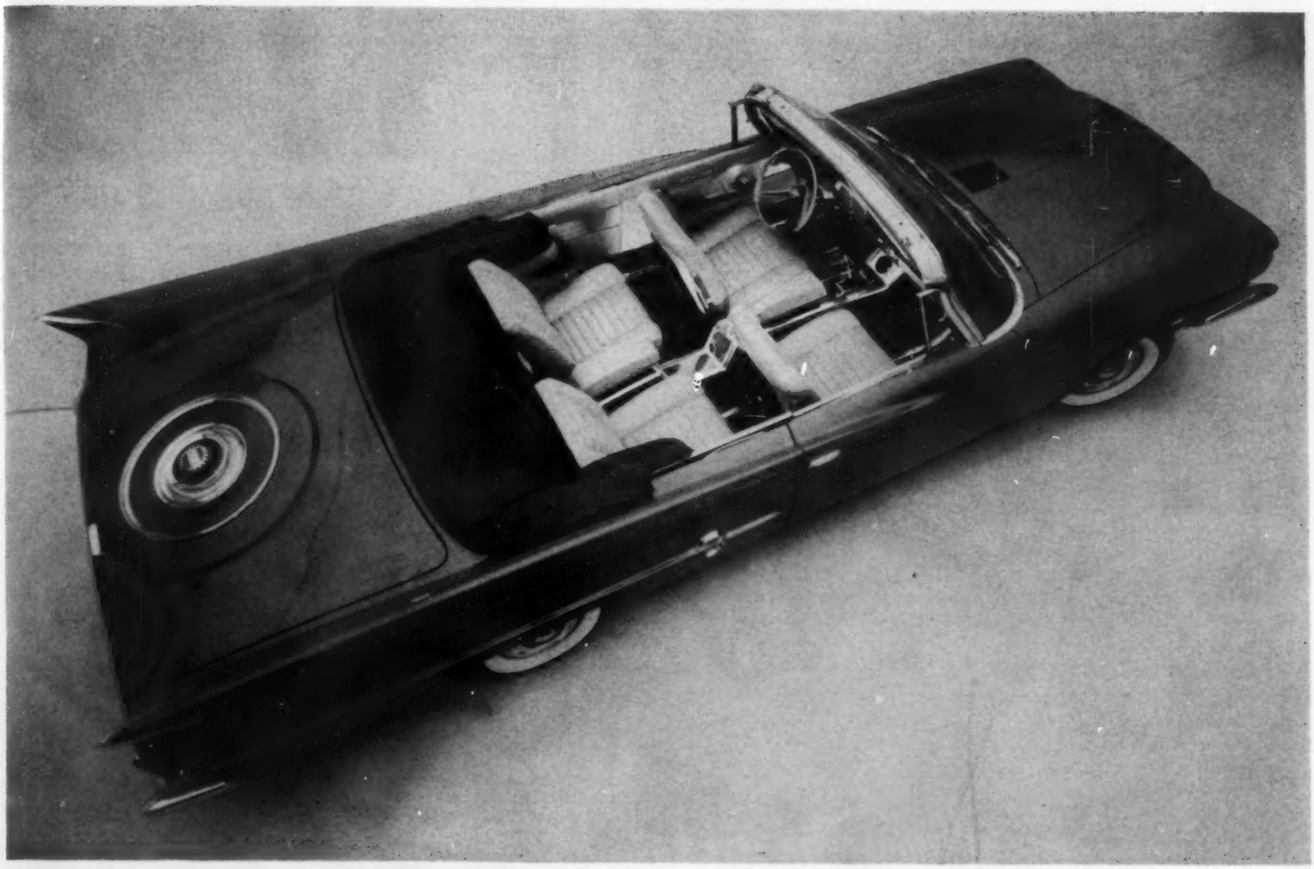
A 300 leaves the assembly line for the "300 Area" where cushions, backs, console and other custom interior parts are fitted by skilled craftsmen assigned to this project. After trimming it goes to the "O.K." lines. Here inspectors swarm over the 300, checking paint, door fit, engine mounts, etc. Once off the "O.K." line, the 300 is road-tested for a final carburetor linkage adjustment. (More 300s are given a road check than any other Chrysler.)

First-time 300 purchasers often comment on the price of the unit compared to a similar Chrysler. "Cost of production" is the reason advanced by a factory engineer who said,

Chrysler's Chelsea test track suits the long-legged 300 well. While researching this story, author Bill Carroll turned a few hot laps at better than 100 mph with a hard-top sample of the Chrysler 300G.

"In a regular Chrysler, two men put the front seat inside a car and hold it while another man tightens eight bolts from underneath. This is done on a regular production basis at the rate of one seat every minute. But it takes one man almost a full day to put the console and seats in a 300. Somewhat related are fabrics in a Chrysler. Vinyl or cloth is placed in a "lay" which may contain 75 layers. The "lay" is under a metal pattern so that one cutting provides material for 75 automobiles. On the other hand, leather for a Chrysler 300 is cut by skilled workers (paid a premium rate) one hide at a time. Two hides are used for each car. On both, the pattern of perforation must lie true when the seats are installed."

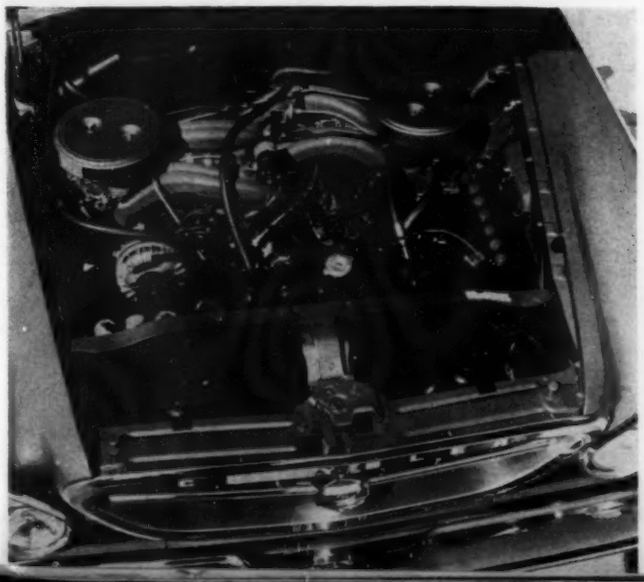
"Who buys a 300?" was the subject of an intensive survey made by Chrysler in November of 1959. They discovered that most 300 owners are well-to-do executives and businessmen, younger than average Chrysler owners and usually driving their 300 faster than other cars. Median annual 300 mileage was over 15,000 miles, nearly double the national



Deluxe interiors have always been a 300 feature; the 300F was no exception with its four separate seats and central console from styling car No. 613.

The first convertible 300 was introduced in 1957 for the C-series machine. This is the 1959 300E version, which also featured a restyled rear end.

Big news in the 1960 model year was introduction of aluminum ram-tuned manifolding. This shows the alternator-equipped 1961 300G engine room.

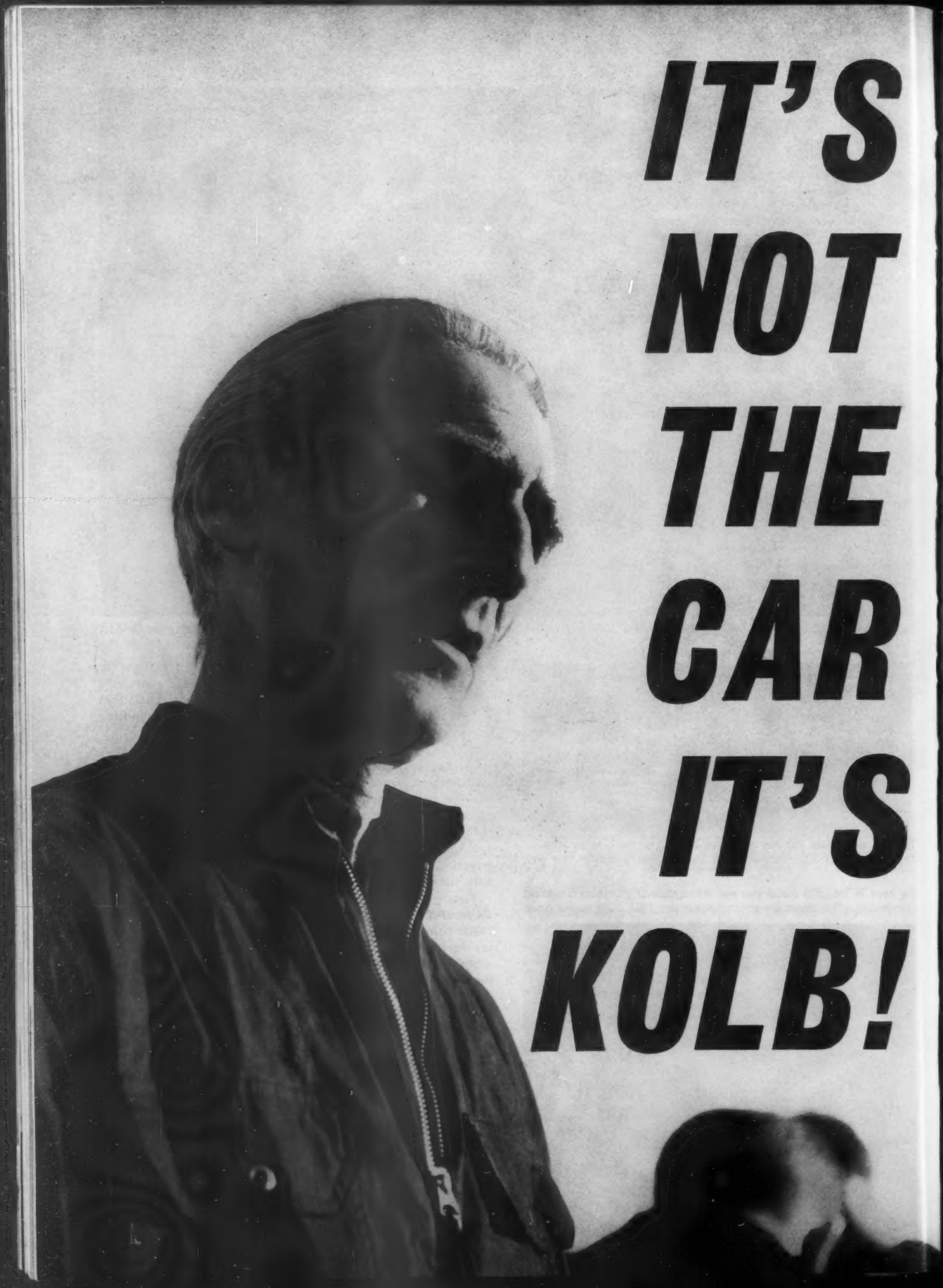


average of all car owners. Buyers indicated an interest in performance mechanics, while two of three were concerned with distinctiveness of 300 design. Most owners claimed that appearance led them to buy, with performance and handling the second most often mentioned reasons for purchase.

When asked for suggestions to improve the 300, a majority suggested improvements to the instruments – one reason a tachometer is now standard equipment. Of the owners, 26 percent were strongly interested, and 15 percent mildly interested, in having a four-speed manual transmission. Thirty-three percent were very interested in having a four-passenger car with bucket seats. Most important to Chrysler officials was the happy report that 66 percent of 300 owners were sure they would buy a new 300 the next time.

Future of Chrysler's 300 was predicted by E. M. Braden, General Sales Manager of Chrysler Division, when he said, "Our principal business is to build family cars. But we find an increasing number of business and professional men who want something more than a family car. They like motoring for fun and want something extra for their personal transportation." Braden also said that Chrysler will continue to build full-size high-performance cars with exceptional roadability, distinctive interiors and all-round usefulness. Production of 300s this year is expected to total 1800 "Gs", the biggest output since 1957 when 2188 "Cs" were produced.

The importance of Chrysler's 300 series is underscored by this unique request in the owner's manual: "We hope you'll write any suggestions or criticism that may come to your attention to the Chrysler Product Planning Department." It takes a lot of nerve to ask for criticism, most of all in the fiercely-competitive automobile business where to people who enjoy fine cars, the 300 remains one of the most desired automobiles on the road. *—BC*


IT'S
NOT
THE
CAR
IT'S
KOLB!

by W. T. Korb

Charlie exhibits none of the trigger-tense attitudes affected by many drivers.

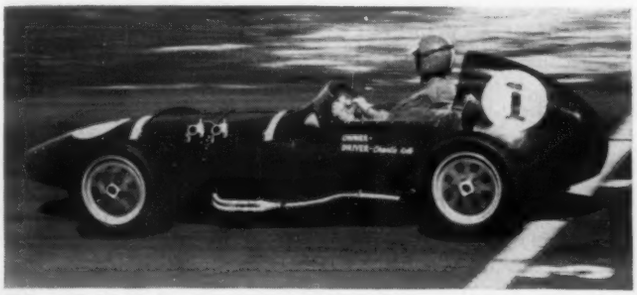
● On first meeting Charlie Kolb, one is immediately impressed by the fact that he more nearly resembles a basketball player than a driver of sports cars. His six-foot-two frame packs a lean angularity that might cause many to wonder how he fits into any vehicle, let alone a Formula Junior of Elva dimensions. Apparently the discomfort is only momentary, however; once Kolb and car frames are united, the combination has proven to be the scourge of American drivers, not only in Formula Junior but in other classes as well.

Actually his tallness, coupled with his athletic ability, was recognized as a decided asset back in the late Thirties and early Forties. Partially on the strength of his ability, he was given a scholarship to Fork Union Military Academy in Virginia, not far from his home in Silver Spring, Maryland. Graduation from Fork Union brought at least two things to Charlie. One was the Virginia manner of speaking—out becomes "ouwut" and about is "abouwut"—which has remained with him since, despite the opposing effects of a cosmopolite environment. The other was a contract in the then-New York Giants baseball organization, which resulted in his playing on their farm teams during 1942-43. But the role of the athlete proved to be precarious during those times, and a draft call forced him from the ranks of baseball.

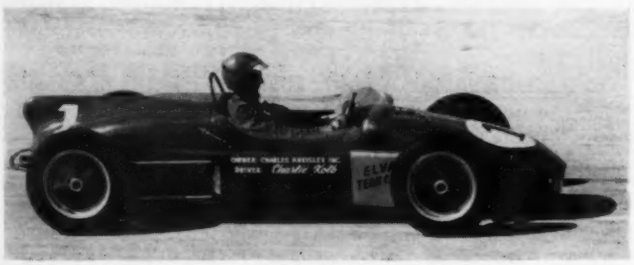
By 1955 Charlie had acquired a Triumph dealership in Silver Spring. To secure some publicity for the newly-released TR-2, he decided to sponsor a car in some races around the area. Accordingly he got Jim Robinson and entered a car in a race at Marlboro, while he proceeded to function during the race solely as a spectator.

"Can you imagine it? I was so green about racing I didn't even know about classes. When our car came in about fifteenth, I rushed down to the pits to tell Jim to forget about it—I wasn't interested in any showing like that." There ensued a brief discussion about classes, the statement from Jim that he had finished first in class, and the challenge to Charlie that if he thought he could do any better, to go ahead and try.

Thus the racing career of Charlie Kolb began on a casual challenge. After the race at Marlboro he filled out an SCCA driver's application. "If I had known how much trouble I would have to go through to get it, I would have dropped it right there," he says. But the application went through, and subsequently he won his first three novice races. "Then all my friends began saying 'great' and I believed them. So I decided to enter some nationals. I bought a new TR—with all the options, you know, like wire wheels and overdrive—and I thought I really had a racing car. I went up to Hagerstown for practice, not ever having seen any big cars like Jags or Ferraris run, and when I got out on that track I thought I had never seen cars go past so fast." Although it was a rude awakening to the fact that driving to win is not learned in three races, this didn't keep Charlie from placing well then and continuing to push TRs successfully for the next couple of seasons of SCCA competition.



DOLIN



SCHULKE

Majority of Kolb's F. Jr. wins have been on the front-engined Elva. The early rear-engined machine (below) was plagued with cooling problems that sidelined car and driver at Nassau race.

He is simply blessed with the ability to win with modest machines—a talent that's hard to beat.

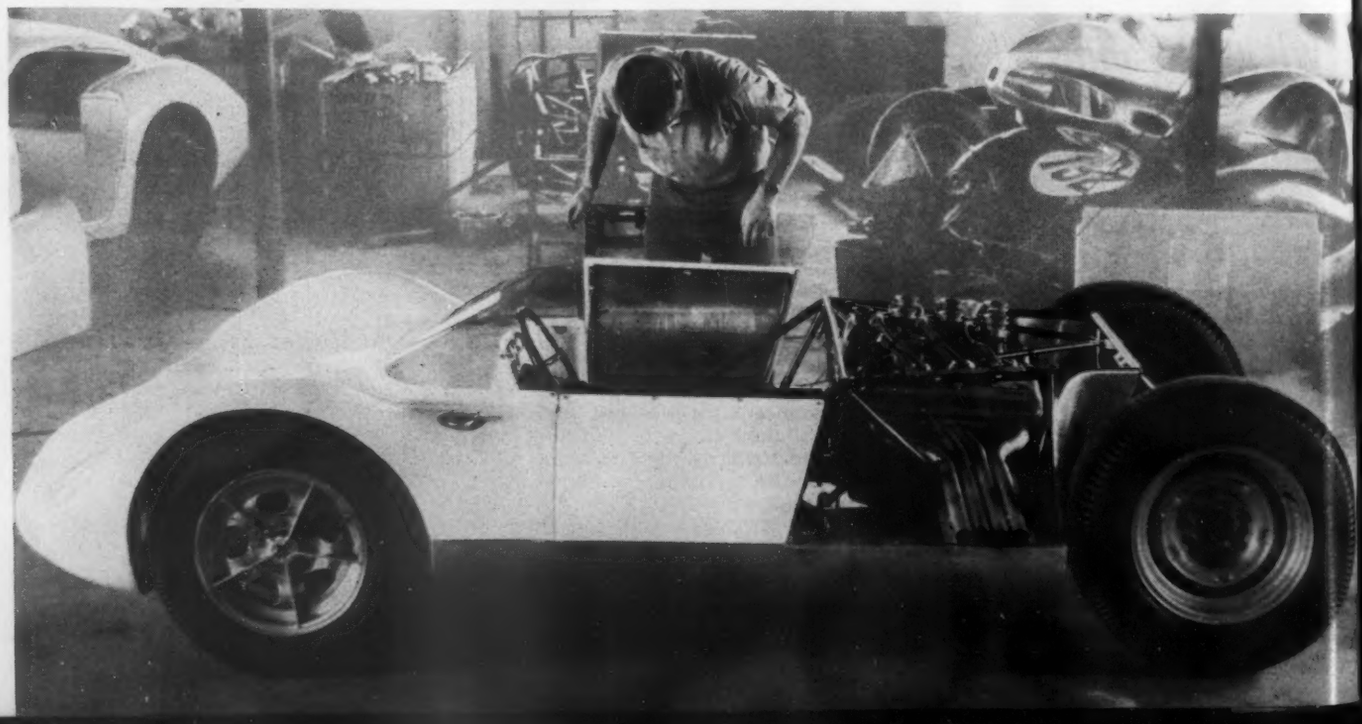
Then, in 1957, Continental Motors in Washington took on the Elva distributorship in this country. Since the make had never won an international event they contacted Charlie with the idea of driving a car for them, and Reggie Smith to enter Elva at Sebring. The decision was that if Elva could win at Nassau in December, the cars could be entered. Consequently Charlie popped off to England, tested a Mk. III Elva at Brands Hatch, met it at Nassau, and proceeded to win quite handily over the other Gs. But in February the lure of private business spirited Charlie away from Continental. As a result he ended up losing the Elva ride, and instead drove a Morgan at Sebring. The rest of the year he campaigned in an old two-liter Ferrari bought from Gus Andrey, and later a Cooper which he ran in G modified to an uninterrupted string of victories in national and regional SCCA races.

The Little Le Mans of 1958 produced one of the wackiest incidents involving Charlie Kolb. It was also one of the few times he failed to win under circumstances that are usually termed "bad luck" when involving other drivers. Charlie and Dick Wilhelm had a Volvo entered, but it developed serious ailments at the last minute and had to be scratched. Not daunted by this, they quickly taped their number on another Volvo they had driven to the race, and Charlie proceeded not only to lead the pack for the first hour in this completely unprepared car, but also to set the track record in the process. Later the excellent pit work of the "team" of three other Volvos, plus the skill of some of their drivers, dropped Charlie and Dick back a bit, but they regained the lead towards the end and looked like sure winners, only to run out of gas a few minutes from the finish. Even so they managed to place third via the usual pushing effort.

Early 1959 saw Charlie still running his Cooper and leading SCCA competitors in the G modified class. All the while he was in contact with Buddy Horton, owner of Southern Cushion Co. of Hickory, North Carolina, regarding driving an Elva for him. The only stipulation was (*Continued on page 72*)

Two-speed Teamaker • by Stephen F. Wilder

Bill Sadler's Mk. V is perfect for "a cuppa" after the races.



► Last April we saw that Bill Sadler had, with hacksaw and welding torch, transformed his front-engined Chevy single-seater into a rear-engined one, adding a clutch but not a transmission in the process. Promised for the near future were a pair of somewhat similar sports car two-seaters for the '61 racing season.

Now, a few months later, we return to the Sadler Car Co. on Dunlop Drive, St. Catharines, Ontario. Pushing past the untended gate marked "No Admittance", we enter the cluttered yet uncrowded workshop. In one corner lies most of a Lotus XV, apparently abandoned. In another a Kellison-bodied coupe stands proudly though unfinished. In the middle of the cleared space rests a short, broad bullet shape. The first of two Sadler Mark Vs, it is sponsored by Comstock Construction Co., Ltd. and will be driven by Sadler himself. Also in evidence is a second one, under construction for Grant Clark, '60 C.R.D.A. champion in his hot Healey.

BIG STOCK CAR POWER

Like all Sadler-built cars, the Mark V glitters with Bill's individualistic ideas and concepts. Some of them are so basic and to the point one wonders why they aren't long-standing traditions. Of course, putting the engine in the rear needs no explanation these days, but Bill wouldn't be himself if he didn't find some different way of doing things. In this case it's a very basic change, though not a mechanical one. This time Bill didn't build the engine himself. He's never felt he was great shakes on engines anyway so this time he had one put together by Doug Duncan of Toronto, Ontario, a man well-known in Canada's rigorous stock-car racing field as a gent who puts them together to stay.

On top are six Stromberg 97s, while inside are BIG valves and an Iskenderian roller cam that's a cross between the RR2 (high torque) and the RR3 (top-end power). The 4.00-inch Grant pistons ride on Cadillac connecting rods machined to Buick centers. The rods and the 3⅝-inch-stroke billet crankshaft are shot-peened for surface strength. With a displacement of 364½ cubic inches, you'd think all this was inside one of the W-348 Chevy engines, but it's our old friend the 283-cubic-inch block that's used. The water pump is a positive displacement unit so small you can hardly believe it. Ignition is by Scintilla Vertex magneto and the clutch and flywheel are by Schiefer.

MAKING A TWO-SPEED BOX

Connected directly to the clutch housing is the Halibrand quick-change final drive. As usual, there are two parallel shafts, the lower input shaft and the upper pinion gear shaft which drives forward to the ring gear. Normally they are connected by a pair of straight-cut (and noisy) spur gears which are splined to the shafts and are easily and speedily changed to suit requirements. What Bill Sadler has ingeniously done is to build a two-speed-and-reverse transmission onto the tail end of the Halibrand case using Halibrand gears and Ford second-gear synchronizers, so that all gears can be quickly changed.

How'd he do it? Into the Halibrand case went a longer lower shaft with splines to suit the Schiefer/Chevy clutch at the front and with about four more inches of the six-toothed splines at the rear. Above, an internally splined coupling slips over the end of the pinion shaft to extend it with a replica of a Ford mainshaft.

The bottom set of gears are narrowed Halibrand gears. They are softened, machined down to half-width, re-carburized and heat-treated. The top pair of gears are also narrowed Halibrand gears. Their splines are cut out and they are welded onto machined-down Ford second-gear synchronizer hubs. The result: each gear can be changed just as quickly (well, almost) as in the conventional Halibrand. Bill can have as many of these fancy gear assemblies as he makes as quick-change ratios in this two-speed transmission. Currently he's made less than half a dozen and uses 1.00 to one for high and 1.40 for low with a 3.70 to one ring and pinion.

The driver of this wide-torque *bolide* has the simplest of all shift patterns: Low-Neutral-High. It's so simple that the lever can be and is spring-loaded away from neutral to hold itself in gear.

A standard Ford synchronizer is used to select both forward gears. Mounted on its periphery is a reverse gear. Directly below, on the lower shaft, is another reverse gear. A reverse idler gear to engage with both of them is mounted on an eccentric which is rotated from the cockpit with its own

separate linkage. Splash lubrication, just like Halibrand, seemed adequate during 100 miles of "at speed" testing at Harewood.

SIMPLE DRIVE AND SPRINGING

From the Sadler gearbox the drive goes forward to the ring and pinion gears, then outboard through large Hooke-type universal joints (the Chrysler-built pot-type joints on the Mark III needed too much maintenance) and unsplined shafts, thence to 7.00 x 16 Pirellis.

Rear suspension geometry is the now-current variation on 1960 Lotus and Lola designs. For added rigidity (and that's plenty important when you're braking from 160 mph), the lower control arm is like a letter N. The diagonal trails outboard and all pivots run fore and aft. The outer ends attach to the tall welded-steel hub carrier. The upper "control arm" is sharply skewed and is made up of two separate pieces. One is simply the axle shaft which of course pivots about its U-joint centers as well as rotating with the wheels; the other part is a rather short radius rod which runs forward and inboard from its pivot on the hub carrier. Like the shaft, it too is about even with the wheel center. The rear Girling spring-shocks are the same size as used on the Lister-Jaguars.

At the front are the usual (for Sadler) pairs of equal-length wishbones. These give considerable tire scrub but no gyroscopic steering fight at all with wheel bounce. The wishbones are swept back so that the front cross-member will be as far forward as possible to maximize the legroom. Girling shock absorbers concentric with coil springs are again used, at the front the same size as used on the Lotus Eleven.

STEERING DETAILS

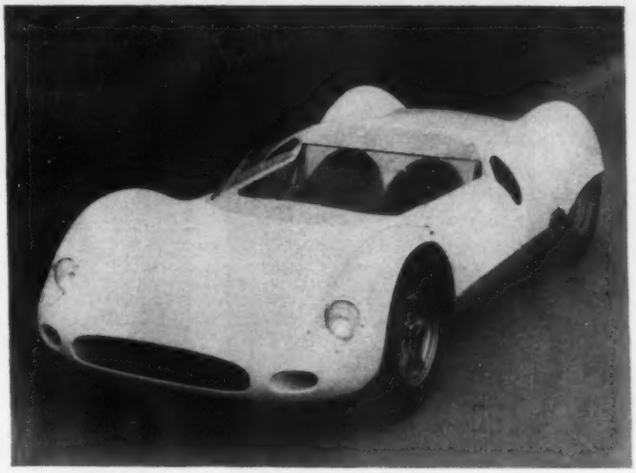
Rack and pinion steering is used. The innards, from Morris Minor as on most specials, are housed in an aluminum casing by Sadler. Although the car is right-hand-drive to suit road racing's predominantly right turns, the entry to the steering gearbox is at the left. The doubly U-jointed steering column zig-zags sharply across the cockpit to give the driver plenty of room around his toes, eliminating any interference with application of feet to the right pedal at the right time.

The steering wheel is a typical Sadler novelty, demonstrating the simple approach for which Bill is becoming renowned. The rim and both spokes are of ¾-inch steel tubing. They are welded to each other and to the steering column, which is also steel tubing. There is no padding on the wheel which looks as simple as a kart's but the really neat aspect is Bill's method of construction. In his words, "Just take about twenty feet of tubing and wrap it around a big brake drum or something chucked in the lathe. By the time it's all wrapped up, you'll have about 5½ rims ready. All you have to do is cut them apart, butt-weld the ends and lay in a gently curved diameter for the two spokes."

TEAMAKING FACILITIES

To avoid cooking the driver, the two water hoses both run along the left side of the cockpit on their way from the Ford crossflow radiator to the engine and the small header tank. The return hose which connects the latter with the top of the radiator has a second high point just ahead of the dashboard. When adding water at the header tank, air must be bled off at that spot. How? Ingeniously simply. A short, small-diameter hose is teed into the water hose here. It terminates in an ordinary valve stem which protrudes through the dash. When the valve cap is unscrewed, air (or water) comes out. There's no valve core, to increase the effective area of the valve, avoiding any restriction of the low-pressure air flow as it's displaced by the water. As Bill's general mechanic, Chuck Richardson, says, "The driver can fix himself a cup of tea whenever he wants it."

Like the spring-shocks, the brakes are Girling all around. Eleven-inch MGA front discs with Austin-Healey front calipers are used at the rear, while the front is all A-H with 11¼-inch discs. Also from the big Healey are the front spindles and kingpins, though the steering arms are shortened noticeably to quicken the steering.



Far out of the backyard special class, Bill Sadler's latest shows ideas and execution that would vie with the best of some well-heeled factories.

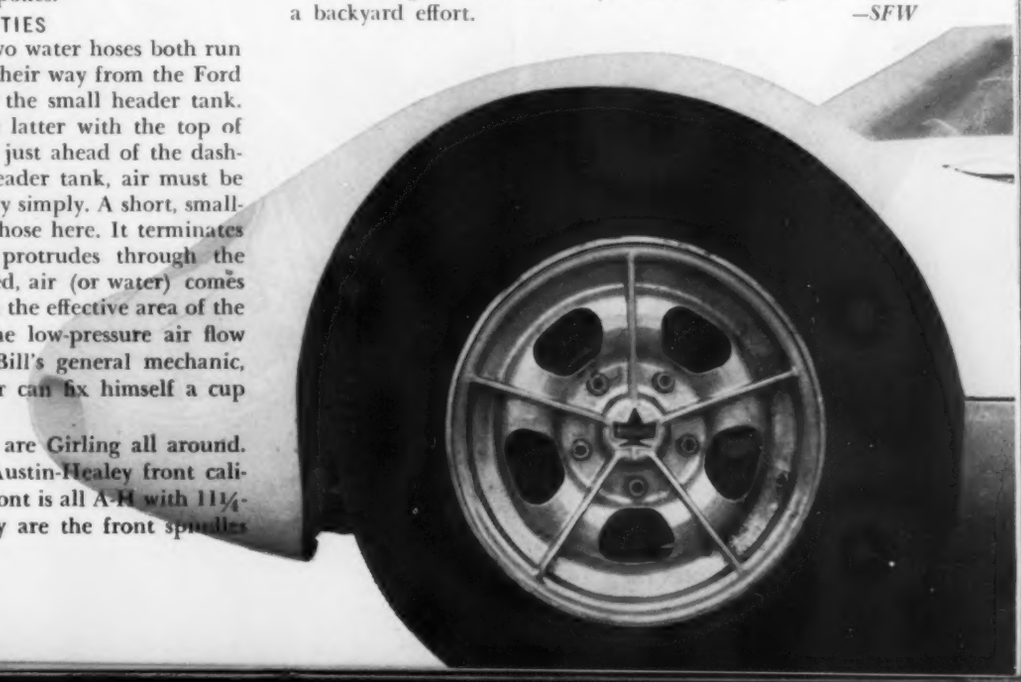
WHEELS FOR SALE

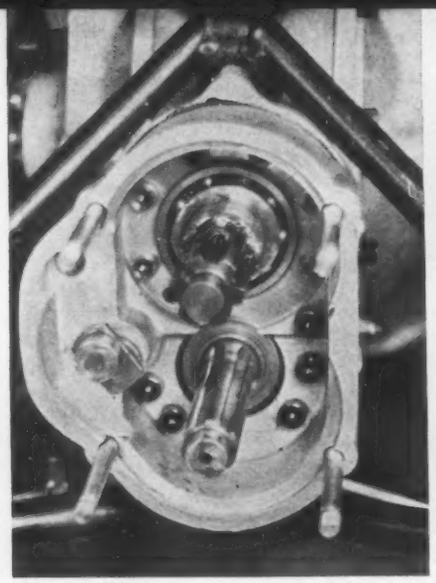
The wheels, since they bolt right onto the Austin-Healey hubs, are going to make a lot of discerning Healey owners perk up and take notice. They are Sadler's original design, a disc patterned with strong radial spokes and cast in Tens-alloy, a high-strength casting aluminum alloy. To effect a further weight saving of 4½ pounds per wheel, Sadler intends to cast magnesium hubs as well.

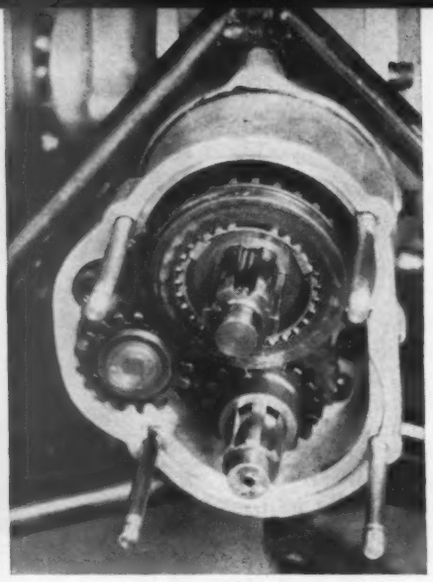
To add a final sparkle to this tempting package and, not unimportantly, to avoid wear and tear of the soft alloy, special nuts are part of the kit. These steel acorns have flanged collars instead of the standard tapered seats for locating the wheel precisely and taking the shear loads. Washers prevent scuffing the alloy as the nuts are tightened. Cost is expected to run about $75 per wheel.

At the front of the Mark V rim size is 15 x 5, the same as on a Healey. At the rear Bill intends to have 16 x 6 rims, though these castings hadn't arrived when our pictures were taken. Tires will be Pirelli, 5.50 or 5.90 x 15 front and 7.00 x 16 at the rear.

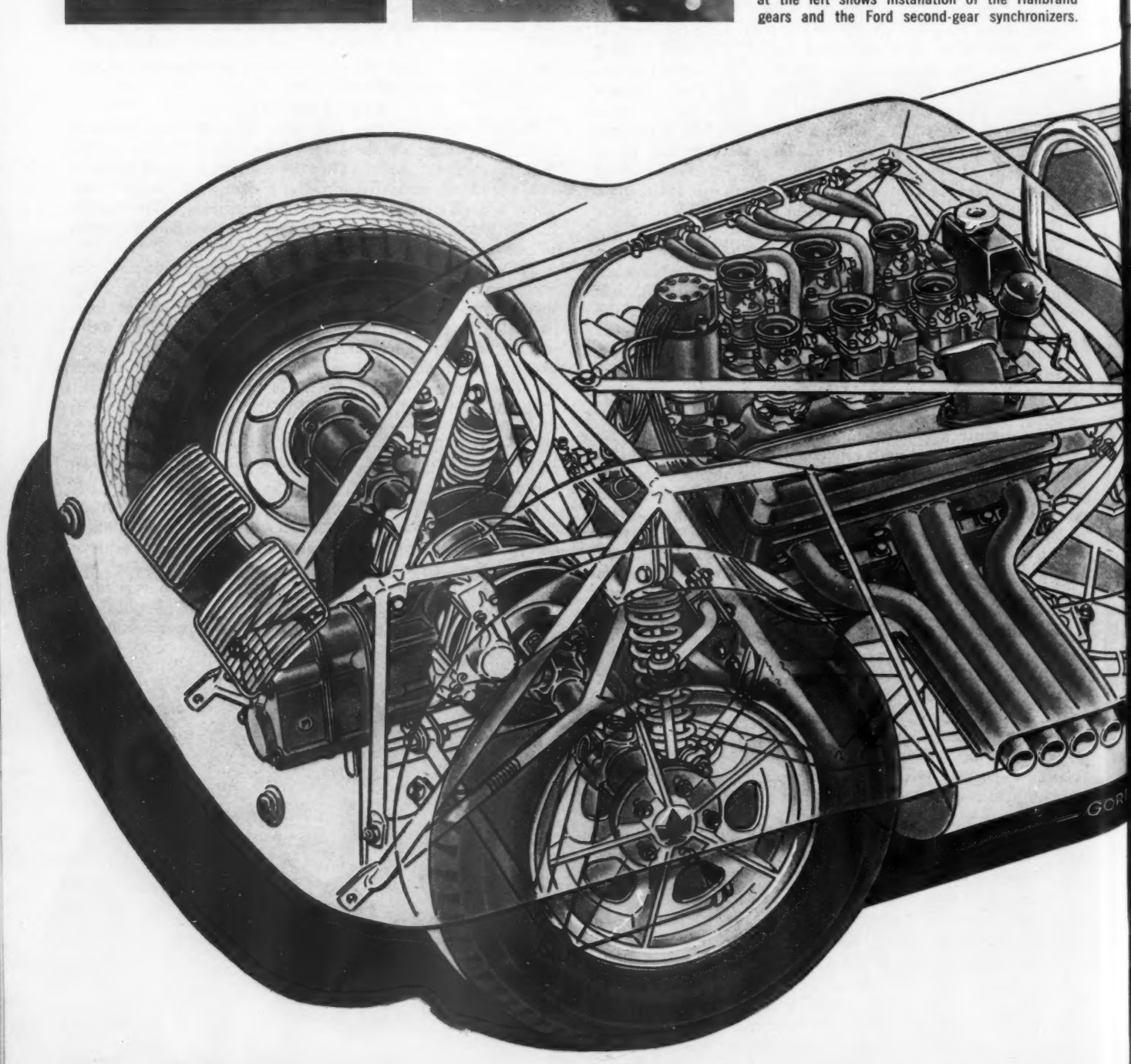
With four sports-racing predecessors and an identical twin on the way, the Sadler Mark V deserves not to be called a special. The Sadler Car Company's efforts have yet to achieve the successes striven for, but with nine Formula Juniors out the door, a twice-built Chevy single-seater and a variety of odd jobs such as the Kellison coupe with the 348-cubic-inch "Police" engine now underway, this can no longer be termed a backyard effort. —*SFW*







The Sadler's ingenious two-speed transmission consists of a Halibrand quick-change section with a long lower input shaft and a Ford-style output shaft. This permits a quick change of the ratios and the unit doubles as a transaxle. The photo at far left shows the basic unit while that at the left shows installation of the Halibrand gears and the Ford second-gear synchronizers.



SPECIFICATIONS:
SADLER MARK V
BUILDER:

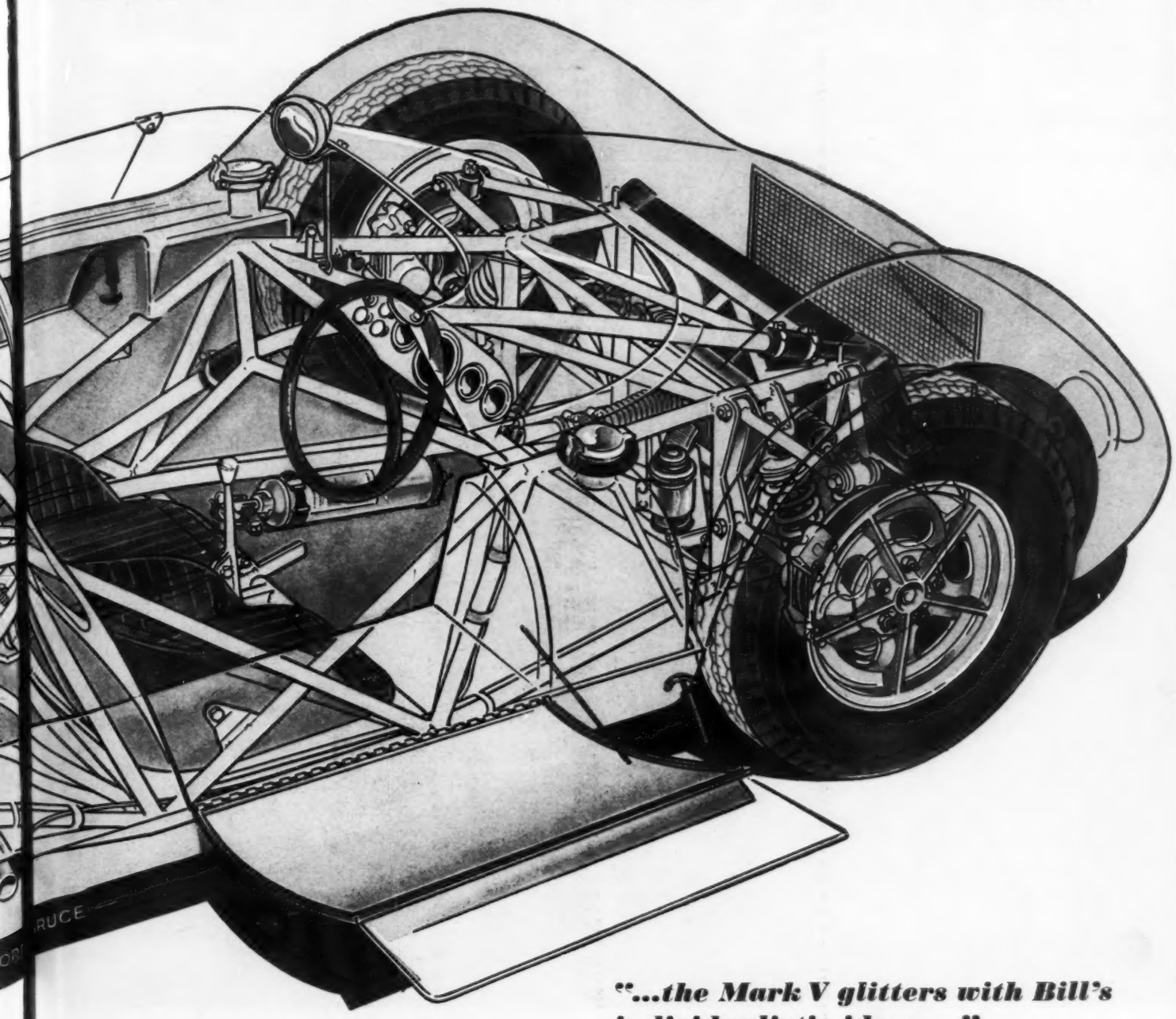
Sadler Car Company
Dunlop Drive
St. Catharines, Ontario
Canada
Phone: MU 2-9806

ENGINE: (Chevrolet V8)

Displacement	364 cu in, 5960 cc
Dimensions	Eight cyl., 4.00 in bore, 3.62 in stroke
Valve gear	Pushrod in-line overhead valves, experimental Iskenderian roller-tappet camshaft
Compression ratio	14 to one
Carburetion	Six Stromberg 97s on log manifold
Power (estimated)	370 bhp

CHASSIS:

Wheelbase	90 in
Tread	F 50 in, R 48 in
Suspension:	F, ind., Girling coil spring-shock units, wishbones, anti-roll bar; R, ind., Girling coil spring-shock units, wishbone and stressed half-shaft, anti-roll bar.
Turns, lock to lock	1⅞
Tire sizes	F, 5.90 x 15; R, 7.00 x 16 Pirelli
Rim widths	F, 5 in; R, 6 in; special Sadler wheels
Brakes	Girling disc; F 11¼ in, R 11 in diameter
Weight	1475 lbs dry
Gearbox	Two-speed Sadler-Halibrand, 1.40 to one low gear
Final drive ratio	3.70 to one



"...the Mark V glitters with Bill's individualistic ideas...."

Road Test: Rover 100 and Humber Super Snipe Series III

Two well-made English sedans attack the problem of personal transportation from two entirely different angles. Both are interesting. Both deserve consideration if you are in the market for a compact luxury car.

► A type of automobile unusual on the American scene is the compact luxury car. For that reason the Humber Super Snipe Series III and Rover 100 are unique in this country. Both are compact, with the Humber having the shorter wheelbase by one inch at 110 inches. Both can be considered "luxury" cars by virtue of their finish and lavish equipment.

Built by two old-line English firms, and powered by in-line sixes – with the Rover retaining a long-developed F-head design, and the Humber using an inclined-valve pushrod o.h.v. system – they share many similar specifications. What makes a joint test interesting are the two completely different approaches taken by the two cars toward the single goal of luxurious transportation. Right from first impressions the two vehicles proclaim their underlying philosophies. The Rover seemed to be one with that group of objects that are personal in nature, such as a favorite set of tools, or golf clubs. Things that are tinkered with until they suit just one person. The Humber, on the other hand, seemed more in line with those symbols of modern life, the telephone and the typewriter: modern, efficient, guaranteeing for everyone many miles of dependable service.

Switching back and forth between the driver's seats of the two cars is an interesting experience. The key start on both cars is low on the panel to the right of the steering wheel where it's easily reached, and equally easy to use. When activated on the Rover the big six burbles almost inaudibly into instant life. A great deal of thought has gone into making this unit as quiet as possible. The air rushing into the brandy-snifter-sized single SU carburetor goes through not only a filter but a silencer as well. The Humber's powerplant – on our test car at any rate – required two turns of the key on damp mornings, or when hot. Both engines had about the same noise level – dead quiet – with the Humber's being the least conspicuous by virtue of softer engine mounts.

Snicking the crooked remote control gear lever (shaped to allow three on the bench-type front seat) into first on the Rover, we eased up on the smooth clutch, and stalled. Alongside the kick panel, just ahead of the left door opening, is the floor-mounted parking brake topped by a bent black handle that makes it look like a fancy dress evening cane. Releasing this and restarting, we were off on our first Rover ride. Acceleration through the well-made four-speed box and overdrive is useful if not startling. Gear changes are somewhat leisurely affairs even after the gate is learned. To offset this to some degree a nicely executed shift is rewarded by a pleasant, sibilant click that seems to say, "well done." The overdrive is a useful option that cuts engine revolutions at 70 mph by 869 rpm.

Getting underway in the Humber was less embarrassing for we spotted and released the parking brake tucked between the side of the front seat and the door on the driver's side. Shifting the automatic transmission pointer from P to D was done without a clonk from the Borg-Warner unit and gentle pressure on the smooth-acting accelerator pedal (this is an important consideration on a car with two-pedal control) got us effortlessly under way. Takeoff may be effortless but it is also leisurely. Using the L driving range helped a bit, but not much. To brighten the picture the transmission is as smooth as a baby's cheek and it's very difficult to tell when the shifts are being made.

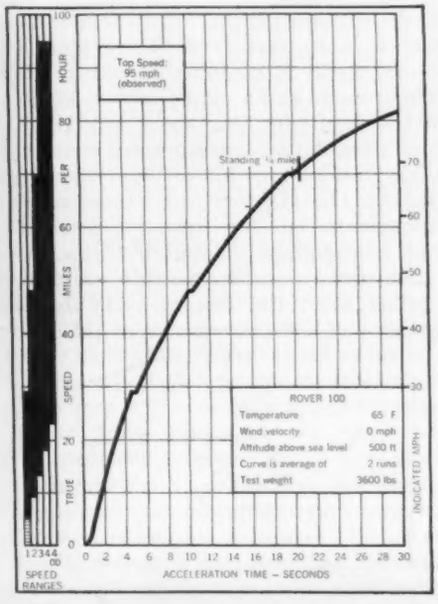
The difference in steering between the two cars was noticed first. On the Humber power steering gave the usual low-effort directional control. One flaw was the vagueness exhibited in the straight-ahead position. Whether this stemmed from the power unit or the actual physical connections used in the steering gear we couldn't determine. On the Rover the steering was heavy at slow speed (even discounting the switch from the power-steered car) but became lighter as speed increased. At any speed it was accurate, and left no doubt in the driver's mind as to what the front wheels were doing.

ROAD TEST:

ROVER 100

Price as tested: $3595 POE New York

Importer: The Rover Motor Co. of N. America, Ltd.
36-12 37th Street
Long Island City 1, N. Y.



ENGINE:

Displacement	160.3 cu in, 2625 cc
Dimensions	Six cyl, 3.06 in bore, 3.63 in stroke
Valve gear	F-head layout with overhead intake valves and side exhaust valves
Compression ratio	7.8 to one
Power (SAE)	104 bhp @ 4750 rpm
Torque	138 lb-ft @ 1500 rpm
Usable range of engine speeds	1000-5500 rpm
Corrected piston speed @ 4750 rpm	2640 fpm
Fuel recommended	Premium
Mileage	21-25 mpg
Range on 13.8 gallon tank	290-345 miles

CHASSIS:

Wheelbase	111 in
Tread	F 52.5 in, R 51.5 in
Length	178.3 in
Ground clearance	7.1 in
Suspension	F, ind., coil, wishbones, anti-roll bar; R, rigid axle, semi-elliptic springs.
Turns, lock to lock	4
Turning circle diameter between curbs	37 ft
Tire size	6.40 x 15
Pressures recommended	Normal F 28, R 24 psi; Fast touring F 34, R 30 psi
Brakes; type, swept area	F 10.8 in disc, R 11 in drum; 419 sq in
Curb weight (full tank)	3280 lbs
Percentage on driving wheels	44%

DRIVE TRAIN:

Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	2.97		12.77	—6.0
1st	No	3.38	66%	14.50	5.3
2nd	Yes	2.04	48%	8.79	8.7
3rd	Yes	1.38	38%	5.92	12.8
4th	Yes	1.00	28%	4.30	17.8
4th OD	Auto	0.78		3.34	22.8

Final drive ratio: 4.3 to one

Muted splendor of Rover interior awes first-time drivers. Parking brake, with tricky handle, is tucked out of the way alongside front door post.

PHOTOGRAPHY: DOLIN

Twin cowl dashboard of the Humber is crash padded along its edge. Vents, with movable baffles, on either corner supply huge amount of fresh air.

Both cars understeered — the Rover more than the Humber. In this respect the Rover was almost vintage in feel. It was at its best on fairly winding roads, being fast and stable under those conditions, seeming to help an interested driver record high averages. The Humber tended, when pressed, toward understeer with tire squeal almost impossible to produce with the power available. The Humber is not intended to be tossed into corners by light-hearted youths. Being a rather dignified carriage (ours was black) it surprises by the amount of roadholding it does possess.

With disc brakes on the front wheels and drums on the rear both cars were superbly equipped for retardation. Pedal pressures were light, both cars being equipped with servo-assist systems. There was never a trace of fade on either car with both being capable of straight-line emergency stops. Of the two, the Rover seemed to have a slight edge in the braking department with the Humber tending to get its tail a little higher up in the air under hard braking. The Humber uses a wide brake pedal that allows braking with the left foot, American-style, while the Rover pedals are smallish and fairly close together with a lot of room around them. The accelerator pedal on the Rover was smooth in operation but the travel was a trifle short.

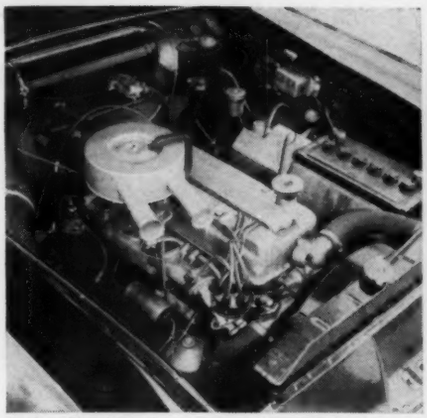
Both cars surprised us with their ride: for luxury cars they seemed unusually firm. The Rover was the harder of the two, getting over bumps at speed with a single woomph of the suspension and returning almost instantly to the level. On a long trip lack of float and sway in the Rover proved less tiring for adults, and less trying on toddler-type tummies. Over a series of bumps — taken at low speeds — the narrow rear seat cushions and springs seemed to be out of phase with the rest of the suspension. The Humber — with the softer suspension of the two — also had a little trouble with wavy surfaces traversed at slow speed. Under these conditions it pitched to a degree that seemed out of place on a car of this type. At speed the suspension is quite good. The car is stable, and bumps are dispensed with quickly without lingering motions of the body.

Driving either car is pleasant — despite the minor criticisms recorded above — and examining all the neatly executed instruments and accessories on both was even more fun. The two fittings that seemed to attract the most attention were the sponge-rubber-padded tool tray that slides out from under the dashboard on the Rover and the small wooden folding tables built into the back of the front seat on the Humber. The last-named were a little narrow for writing on but good for cups or glasses when the car was at rest. Both cars had wood trimmed dashboards with very complete sets of instruments including speedometer, water temperature and fuel gauge (the Humber's read in both gallons and liters), ammeter, clock, oil pressure (Rover uses a warning light) choke, choke warning light, ignition warning light, windshield washer, map light, panel light switch (with rheostat), turn signal warning light, ash tray, twist key ignition lock, and windshield wiper switch. The Humber had a cigarette lighter but no reserve fuel tank switch, while the Rover had two glove compartments (one lockable) as opposed to one on the other test car. A novel feature of the Rover's fuel gauge is its ability to show the amount of oil in the crankcase just by pressing a button, even with the engine running.

Seating — on bench-type leather-covered seats — was good and the pull-down arm rests used front and rear in both cars made it even more comfortable. Short drivers in the Rover were unable to see the right front fender, nor could they dangle an arm in the breeze due to the windows not rolling down flush with the tops of the doors. This might be a blessing in disguise — it gently hints that both hands should be on the wheel. The Rover has adjustable arm rests on both front doors while the Humber's are incorporated in stiff-sided door pockets. Pockets on the Rover are of the more traditional type.

Heating and ventilation controls and equipment seemed more than adequate in both cars. The Rover retains a movable cowl vent that works in conjunction with the fan-equipped heater. Three levers and a switch can be adjusted to various positions to cope with just about any kind of weather. The Humber's ventilation system seemed simpler to operate with two big knobs — one for air and the other heat — plus a fan switch. The Humber had a more orderly arrangement of instruments, but the three big knobs for lights and ventilation strung along the middle of the dashboard could have more useful pointers, the thin white lines used being hard to see from the driver's seat. On first viewing, the arrangement of the instruments on the Rover seemed haphazard. A frantic bit of cockpit drill when we ran out of gas on a traffic-laden bridge approach changed our thinking on this point. We were able to switch over to the reserve tank, set the choke, get the signals going, and restart while still rolling — all without missing a button.

In summing up our thoughts on the two cars under review we can't help but repeat and enlarge on our opening remarks. Both are well-made, expensive vehicles intended to preserve their performance and looks over a number of years. One is meant to be a transportation machine; the other is a transportation tool. —*C/D*



In-line Humber six was smooth and silent at all speeds. Its 130 bhp from 180 cubic inches mark it as a fairly unstressed long-wearing engine.

Humber rear seat is equipped with twin folding tables, ashtrays, arm rest and cigar lighter. Leather-covered bench seat is very comfortable.

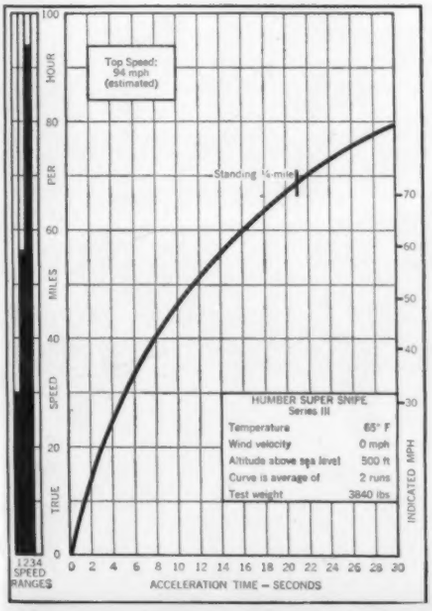
Rover's F-head in-line six cylinder engine presents a rather vintage appearance with a non-painted rocker cover and gleaming pipes supplying air to the giant S. U. carburetor. Unit supplys an easy, unflustered 104 horsepower. Relatively unstressed, it can stand up to many years of hard motoring.

ROAD TEST:

HUMBER SUPER SNIPE Series III

Price as tested: $4295 POE New York

Importer: Rootes Motors Inc.
42-32 21st Street
Long Island City 1, N. Y.
9830 West Pico Blvd.
Los Angeles 35, Calif.


Top Speed: 94 mph (estimated)
Standing ¼-mile
HUMBER SUPER SNIPE Series III
Temperature 65° F
Wind velocity 0 mph
Altitude above sea level 500 ft
Curve is average of 2 runs
Test weight 3840 lbs
TRUE MILES PER HOUR
INDICATED MPH
1234 SPEED RANGES
ACCELERATION TIME – SECONDS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
0 20 40 60 80 100
30 40 50 60 70

ENGINE:

Displacement	180.5 cu in, 2965 cc
Dimensions	Six cyl, 3.44 in bore, 3.25 in stroke
Valve gear:	Vee-inclined overhead valves, rockers and pushrods
Compression ratio	8.0 to one
Power (SAE)	130 bhp @ 4800 rpm
Torque	161 lb-ft @ 1800 rpm
Usable range of engine speeds	900-5300 rpm
Corrected piston speed @ 4800 rpm	2680 fpm
Fuel recommended	Premium
Mileage	20-23 mpg
Range on 15.1 gallon tank	300-350 miles

CHASSIS:

Wheelbase	110 in
Tread	F 56.9 in, R 55.5 in
Length	180 in
Ground clearance	7 in
Suspension:	F, ind., coils, wishbones, anti-roll bar; R, rigid axle, semi-elliptic springs.
Turns, lock to lock	4.5
Turning circle diameter between curbs	38 ft
Tire size	6.70 x 15
Pressures recommended:	Normal 24 psi; Fast touring 30 psi
Brakes; type, swept area:	F 11⅜ in discs; R 11 in drum; 401 sq in
Curb weight (full tank)	3520 lbs
Percentage on driving wheels	40%

DRIVE TRAIN:

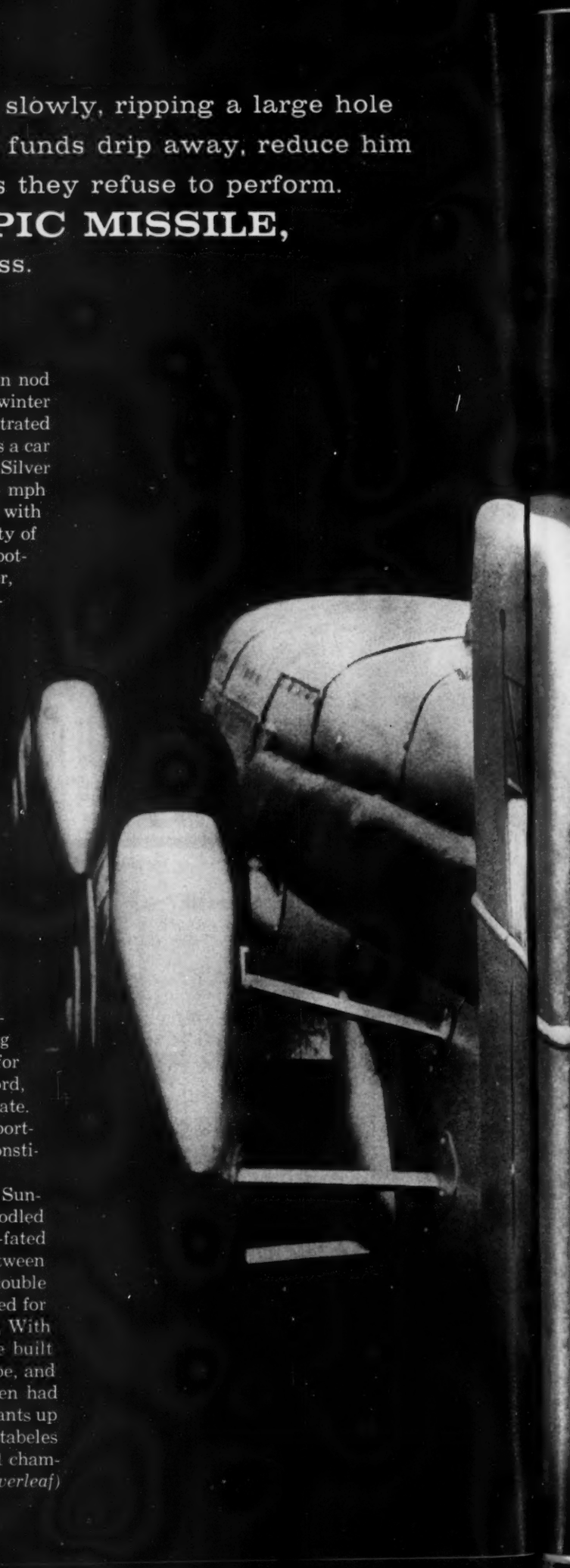
Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev.	Auto	2.09		8.82	—8.9
1st	Auto	2.31	62%	9.75	8.0
2nd	Auto	1.43	43%	6.04	13.0
3rd	Auto	1.00		4.22	18.6

Torque converter ratio: 2.4 to one at stall

Final drive ratio: 4.22 to one

Not all cars kill quickly. Some do it slowly, ripping a large hole in the owner's wallet and, while his funds drip away, reduce him to a quivering lump of frustration as they refuse to perform. Consider the **MISANTHROPIC MISSILE,** biggest soul-destroyer in the business.

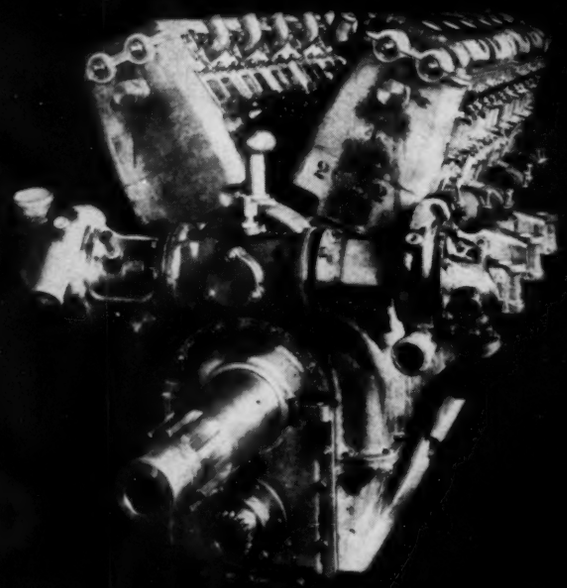
by Dennis May



● Like the good Homer, Louis Hervé Coatalen didn't often nod but he had his morphetic moments. It was in the fall and winter of 1929, with his chin well down on his chest, that he perpetrated the five-star goof of a long and mostly distinguished career as a car designer. Result was the bulldozer's kissing cousin known as Silver Bullet, bespoken by Kaye Don for an attack on the 231.44 mph Land Speed Record that Segrave had set the previous spring with the Irving Special, alias Golden Arrow. It was in the capacity of chief engineer to the S-T-D consortium (Sunbeam-Talbot-Darracq) that Coatalen, cosmopolitan son of a Breton villager, created the biggest and most powerful automobile ever conceived, and Sunbeam built it at Wolverhampton, England, but the makers, maybe with a premonition of ignominies to come, were content to have it commonly known by the nom-de-guerre that Roland E. Dangerfield, now chairman of *The Motor's* directorate, had coined for it in an unprophetic moment. "Silver Bullet" was euphonious, yes, but "White Elephant" would have been more accurate.

The highest two-way speed this massive missile would ever attain, to come to the point with brutal directness, was 183.112 mph, timed over the flying mile at Daytona on March 31, 1930. That was not only 48 mph short of Golden Arrow's extant record but a round twenty knots inferior to the mark set in '27 (203.79) by a Coatalen-designed Sunbeam developing just a quarter of the Bullet's power. First to last, Silver Bullet's book-keeping was a one-column operation with all the entries on the debit side. The car cost the sterling equivalent of $60,000 to build, a figure never before approached in LSR annals and likely only once subsequently exceeded, by Donald Campbell's turbined Bluebird. Expenses at Daytona during Kaye Don's month-long sojourn ran at the rate of $800 per day. All he had to show for the trip was the loss of his cherished Brooklands lap record, skittled by Tim Birkin while Don wasn't there to retaliate. When the car was finally sold for scrap by Fred Dixon, it reportedly realized $1800, roughly the by-weight value of its constituent materials.

While not otherwise occupied designing and producing Sunbeam passenger and Grand Prix cars, Louis Coatalen had doodled several successful LSR machines before embarking on the ill-fated Silver Bullet. It's therefore natural to look for affinities between his 1000-horsepower Sunbeam of 1927—this one beat the double century for the first time in history—and the big slug he sired for Don. The fact is, though, no such connecting thread exists. With few exceptions the LSR cars of the interwars period were built around existing aircraft engines, which could permissibly be, and often were, far gone in obsolescence and debility. Coatalen had followed this precedent in '27, actually dredging his propellants up from the ocean bed. These were a couple of Sunbeam Matabeles that had powered the speedboat Maple Leaf VII in the 1921 championship and gone down with her when she sank. *(Continued overleaf)*



V12 was an original, designed and built for the record attack. Hoped-for power was 4000 bhp from 48 liters. Early air brake between twin fins proved large failure.

Subsequently, in their landlubbering role at Daytona, the dehydrated Matabeles were primary contributors to a dual triumph, for on its way up to the double century the Sunbeam turned three miles per minute for the first time on record. This, you might have thought, would have confirmed Coatalen in his shoestring philosophy, but it didn't. On the contrary, he took the unprecedented course — one that's never been repeated in this field — of producing an all-new engine design for Silver Bullet. Calculated output of this powerplant was 2000 bhp and, the overall target being 4000 horse, two units were built. By way of explanation for what seemed an incredible piece of engineering prodigality, there was talk, albeit with not much conviction behind it, of Silver Bullet's engines founding a new family of Sunbeam aircraft motors. As far as I'm aware, nothing ever came of it.

The romantic Sammy Davis, writing in THE AUTOCAR in January of 1930, thought Silver Bullet's disembodied chassis looked strangely like the blackened, fossilized skeleton of some prehistoric monster, with its massive backbone and hooped ribs — "a great saurian." Less poetically, it was a great bastard. The car was successively owned by three men, Don, Jack Field and the late Fred Dixon, and I've recently discussed it, with special reference to its handling and ground holding, with both the survivors of this trio. Kaye Don says it handled satisfactorily at the highest speed he hit (186 mph one way at Daytona), but hazards no guess at its probable behavior in the region needed to take the record. Field, who by an odd coincidence now works for Don as manager of the latter's Ambassador motorcycle factory at Ascot, England, says the thing was a real handful at the best speed *he* ever hit — 174 on Southport beach in Field's native Lancashire. It's no reflection on Don's veracity to imagine that the passage of three decades may have softened his judgment somewhat; also, as a wholesale breaker of the Brooklands lap record, the roughest and toughest form of automobilism known to Britons of his generation, he likely erred on the side of under-average sensitivity and over-average courage. Apart from these first-hand opinions, moreover, all the available evidence indicates that Silver Bullet had strong and inherent misanthropic tendencies.

And if it had, why had it?

Basically, perhaps, for these two reasons: 1, Most of the weight, amounting to 4½ tons, was amidships, with relatively negligible mass at either end; 2, The whole of its 4000 bhp was routed through a single pair of wheels. Never before or since have such paroxysms of urge been transmitted through as few as two wheels. For comparison it's worth recalling that the last of Malcolm Campbell's Bluebirds, which did 301 mph at Bonneville in 1935, developed 1500 bhp *less* than Silver Bullet and, although lacking f.w.d., had four wheels on its back axle.

Kaye Don's British reserve almost cracked after car's Daytona runs.

Silver Bullet's general architecture owed nothing to anything that had gone before and deservedly had no subsequent emulators. The two 50° V12 engines, with a joint displacement of 48 liters and a total piston area of four square *feet*, were harnessed in tandem ahead of the cockpit. (This again was a breakaway from Coatalen's recent thinking in the LSR vein — the 1000-horsepower Sunbeam had mounted one engine ahead of and one behind the wheelhouse.) The powerplants weren't directly coupled, a spur multiplication gear dropping the drive from the tail of each crankshaft to a countershaft running beneath the full length of the engines. The countershaft ran on roller bearings at 2.3 times crank speed; between it and a three-speed gearbox was a multiplate clutch incorporating a dog clutch that enabled the drive to be locked solid when the action really started. Next transmission stage was via two splayed shafts to straight-cut bevel gears on the live back axle. A novelty, 31 years ago, was hydraulic operation for the clutch. The driver, (*Continued on page 75*)

Fred Dixon, last owner of the Silver Bullet, gingerly guides it through a tight turn. He intended to scrap superchargers and install 24 carburetors for final try

Monsieur Constatin holds his d.o.h.c. head for the 203 and 403. Twin-stick head ups power to 98 bhp.

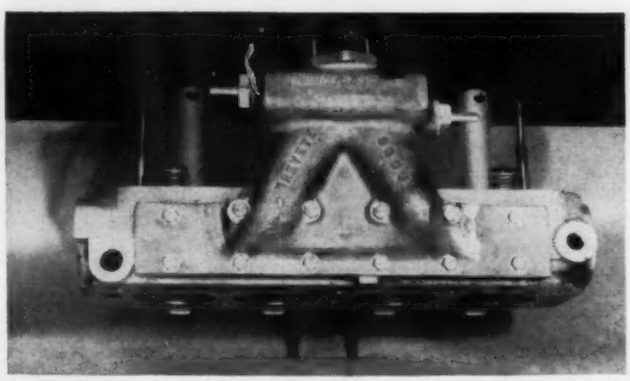
POWER for the PEUGEOT

by Alex Walordy

Peugeot owners share a secret: their cars have more roadholding than power. This unusual imbalance can be corrected—just bolt on a nice big gob of extra horsepower.

► When you encounter a car like the Peugeot with impeccable road manners but only moderate passing power, the temptation is to head for the nearest speed shop and remedy the situation. As little special equipment is available for the 403 or 404 in the United States, we paid a visit to the leading Peugeot speed exponent in France, heavy-set, amiable Monsieur Constantin. His *Auto Nautique Constantin* located just on the outskirts of Paris at 17 Avenue de Paris, Vincennes (Seine) specializes, as the name indicates, in automotive and marine engine conversions for the Peugeot. Among other gems they produce Roots-type blowers, special manifolds and double-overhead camshaft conversions, and fit pairs of dual Webers to the 404.

The 403 has virtually all the ingredients of a powerhouse: 1½-liter displacement, hemispherical head, large valves, forged crank, and a rugged engine design. Unfortunately this impressive array of equipment must breathe through a 32PBIC Solex, just right for a warm Dauphine. The passage from the carburetor leads through the valve cover to a water-heated manifold cast integrally with the head. Result: morning warmup is excellent, but power isn't.



Special Constantin manifold bolts right to the side of the stock head. Cover plate is removed before fitting manifold and larger Solex carb.

FIRST STEPS

Fortunately, the side of the 403 head is fitted with a removable cover plate. Constantin's simplest conversion is to remove this plate and do a thorough porting and polishing job. The head is milled 1.7 millimeters (0.067 inch), raising the compression from 7.5 to 8.0 to one. A complete manifold is then bolted to the side of the head, and the stock carb is replaced with the larger Solex 40PAI. An aluminum plug closes the original entry from the valve cover to the head. To make room for this installation the valve cover must be turned around. A small aluminum plate seals off the mounting pad of the old carburetor. While power increases appreciably after this modification, warm-up remains unaffected, for the replacement manifold has a water-heated muff and the ports continue to be surrounded with coolant. Dual valve springs, stiffer than stock, raise the revving capability of the engine.

Another variation on the same theme is a special two-branch manifold used in conjunction with horizontal carb installations, usually Webers. This manifold is seen on all the more powerful Constantin conversions, but carries the penalty of interfering with the distributor. The latter must be relocated to a base mounted on the timing case cover, and driven by a "screwdriver tip" on the camshaft. Each branch of the manifold incorporates a venturi-like restriction, approximately at the mid points. A substantial power increase is claimed for this design, which is probably due to improved control of liquid fuel flow along the manifold and port walls, through providing a second high-velocity area with fuel pickup by the air stream.

403 BLOWER

Undoubtedly your best value in terms of horsepower gain per dollar is to install Constantin's Roots-type blower on your 403. It's a well-made unit of simple and rugged design. The crankshaft pulley is replaced by a dual-groove aluminum one supplied with the kit. After removing the cylinder head and porting it to your heart's content, bolt on the special adapter manifold and its pressure-relief valve. Next comes the blower, a stock carb and the customary connections. As before, the

original opening into the port passages is blocked with an aluminum plug and a small cover plate is installed over the former carburetor mounting pad. There's no need to turn the valve cover around in this modification.

Belt adjustment for the blower drive is provided by a threaded front sheave on the blower pulley. Screwing it in raises the belt in the groove to tighten it. The sheave is locked in position by a pair of Allen screws. An elaborate long-branch exhaust header is available for blower installations and would seem like an excellent idea even for an unblown 403.

TWIN CAMS?

Moving into the domain of the exotic, Constantin performs a hair-raising modification on the 203 Peugeot, fitting it with double overhead camshafts. While the 203 and its 1290 cc engine are not imported into this country, the conversion should be directly adaptable to the 1465 cc 403, for the two are very similar. Testing this design on the 403 will be done soon at the *Auto Nautique's* well-equipped machine shop and dyno cell.

The cylinder head remains virtually unchanged, except for removing the pressed sheet-metal tubes that shield the spark plugs. A new casting for housing the twin cams is bolted to the head. Drive is through a separate gear tower placed at the rear of the engine. The bottom gear in the tower pilots on a stud screwed into the stock camshaft, and is driven by three pins. Two more gears are used to relay the power to a fiber gear designed to drive the camshafts in relative silence.

Three drive pin holes in the cam flanges, and five in each of their forty-tooth gears provide an accurate vernier timing adjustment. The oil line which originally supplied the rocker arm system now leads to the d.o.h.c housing. Part of the oil runs down the gear train and is led back to the crankcase by an outside line. Amazingly light and efficient hydraulic lifters, patented by Emile Petit in France, are used to provide zero-lash adjustment. A two-branched manifold, described above, and a dual-throat 40 milimeter Weber feed the conversion. The distributor moves up front, out of the manifold's way. The conversion develops between 98 and 100 horsepower at 7000 rpm, a most creditable achievement.

THE 404 GETS TREATED TOO

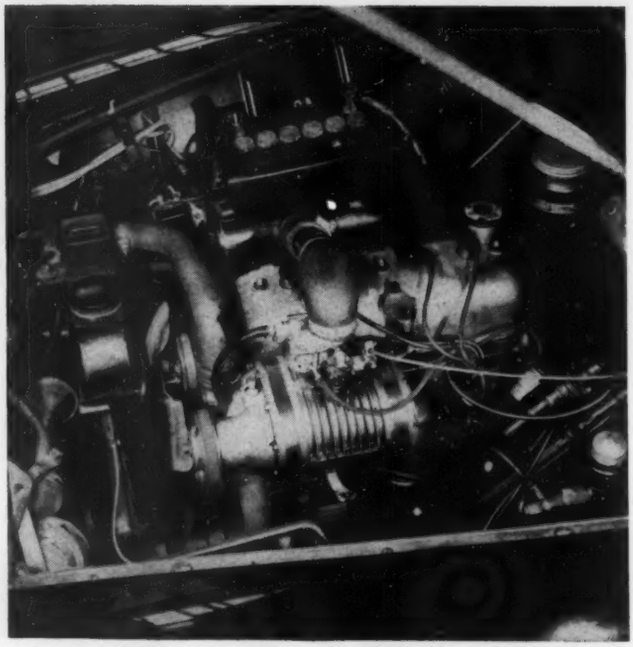
The Peugeot 404 has already come under Constantin's careful scrutiny. Here the cylinder head casting sports four core plugs which cover the individual intake ports. They are promptly removed for convenience in porting, and two ¼-inch aluminum flange plates are made up to fit the openings. These form the basis of headers leading to two dual Webers fitted with air trumpets tuned for length. A ride in the 404 is always pleasant, but far more rewarding with this equipment. Here, as in the 203, the distributor is moved forward to a base incorporated in the timing case cover.

The 404 has also been fitted with a blower installation. The blower design remains the same, except for a substantially longer compressor drive neck. Top speed is improved by approximately ten percent, and quarter-mile times are cut to roughly 20 seconds. Acceleration and traffic driving are completely transformed by the blower, especially at higher speeds.

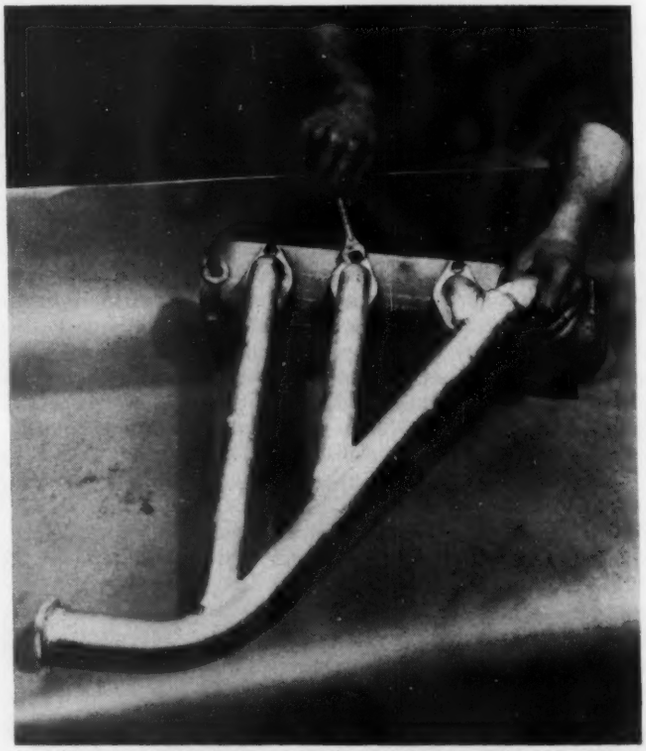
Power modification improvement for the block itself has not been neglected, for domed pistons and correspondingly higher compression ratios are available through Constantin, in France, and undoubtedly also through West Coast speed equipment shops. So far we have spoken of modifications which result in a very docile and tractable engine. If you plan to push matters further, and are willing to shift more frequently to keep those revs above 3000, several grinds of cams are available from Iskenderian. The PO-3T full-race has a lift of 0.420 inch. Intake opens at 18° and closes at 59°, and exhaust opens at 59° and closes at 18°. Running clearance is 0.015 inch for intakes and exhausts. There is also a P2 super-race grind with a lift of 0.415 inch that calls for a running clearance of 0.018 inch. Intakes open at 20° and close at 60°, while exhausts open at 60° and close at 20°. Though Isky recommends springs 25 percent stronger than stock, he does not sell them. This cam makes the engine suitable for a special, but hardly for street driving as the usable rev range would be 4000 to 7500 rpm. Either grind is available on an exchange basis for $35 or for $75 outright.

You'll have a great deal of fun in your modified Peugeot. What's more, you'll enjoy a feeling of confidence thanks to the extra passing power and your knowledge that the car can "take it."

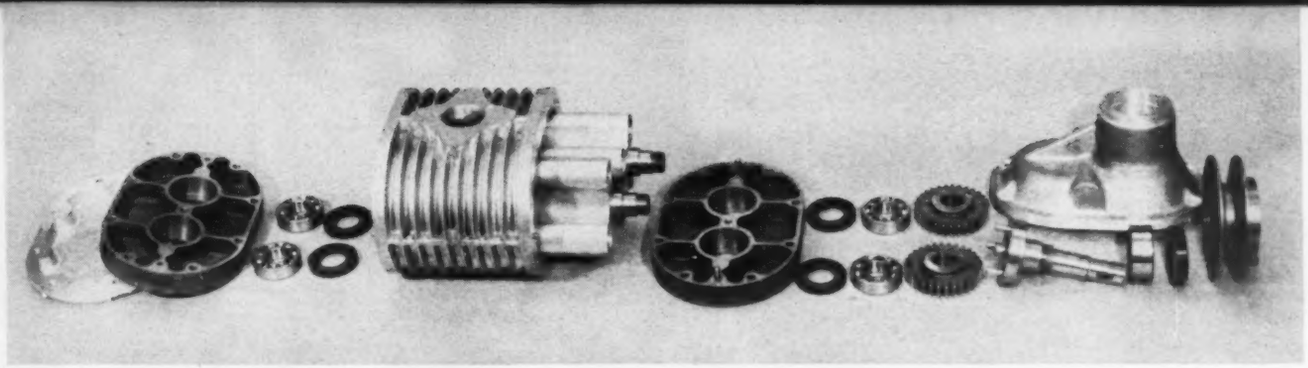
—AW



Constantin blower for the 403 is a simple Roots-type. It bolts to the block via a special manifold. It is belt driven from crankshaft pulley.



Straight line exhaust headers were designed for use with supercharger, but can be used to good advantage with the other Constantin soup kits.



Best buy for more power is this blower. Built up from these 20 parts it is a simple, rugged unit. Fitting requires blanking off original carburetor intake.

PEUGEOT SPEED EQUIPMENT

Where to get it: Auto Nautique Constantin
17, Avenue de Paris
Vincennes (Seine)
France
Telephone: DAUmesnil 01-65 & 23-29

Send check or International Money Order with your order, pay import duty, handling and shipping charges upon receipt.

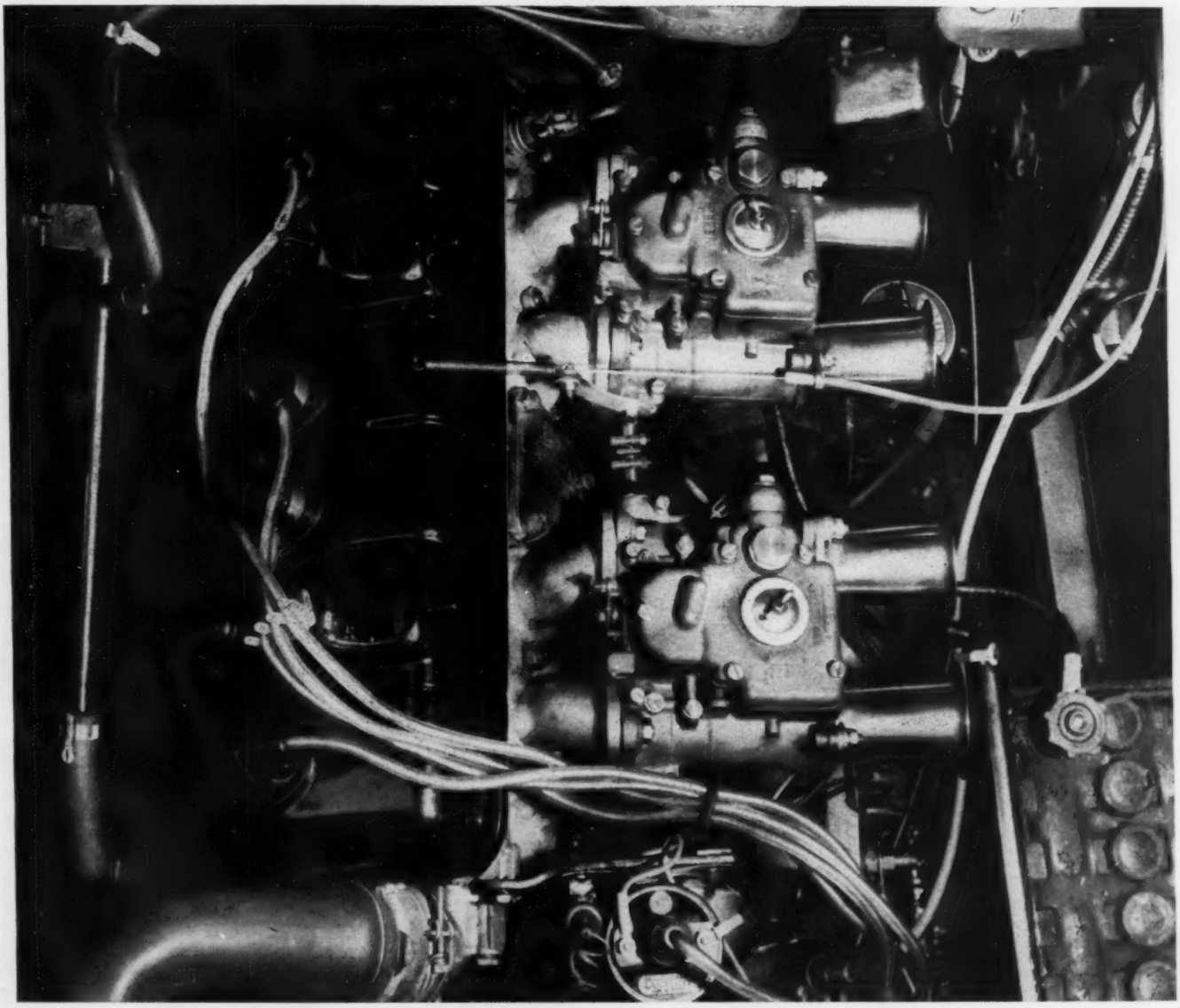
Special camshafts for 403, 404	70
Four branch exhaust manifold 203, 403	36
Straight-through exhaust pipe	19
5.25 to one wheel and worm gears 203, 403	42
Speedometer gears for above	3

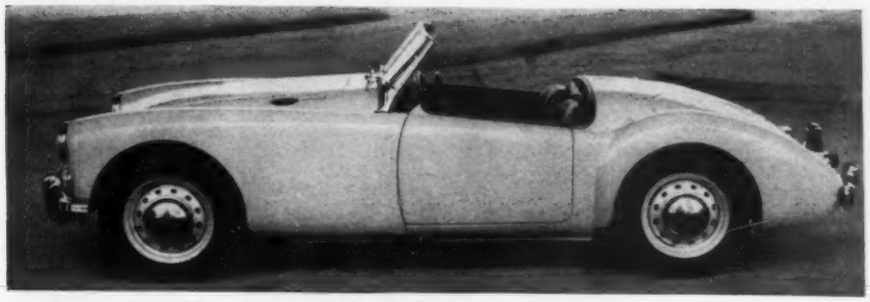
	Price of manifold alone	Complete installation kit
Manifold for 403 with downdraft Solex	40	88
Manifold for 403 with sidedraft twin-choke	60	157 with Solex (180 with Weber)
Manifold for 404 with sidedraft twin-choke	80	176 with Weber
Manifolds for 404 with two sidedraft twin-chokes	100 (per pair)	276 with 2 Webers
Set of stiffer valve springs	12	
Reinforced valve spring retainers	4	

Kits include above two items and air cleaner, carburetor(s), with correct jets, manifold(s) and, except for the first one, the distributor extension.

Supercharger for 203, 403, 404	170	205 estimated
Double overhead camshaft conversion kit	600	

"Hey Dad, is that a Peugeot?" Dual Webers mounted on special adapter manifolds give 404 extra urge. Before mounting, distributor and drive are moved.





Road Research Report: MGA 1600 Mark II

► The MG engineering division of the British Motor Corporation received a directive last year that the MGA was to be improved once again. Top speed was to be raised "comfortably clear of 100 mph," cruising speed was to be raised appreciably and these two performance aims were to be met with no major change in engine design or body sheet metal. The result is the MGA 1600 Mark II — mission accomplished!

The Mark II scores heavily in providing the wanted power and speed without extensive changes in a basically excellent design. The top speed of the roadster in street trim is about 105 mph and a 90-mph cruising speed is accomplished without undue effort. Despite the performance gains, the result of using a 1622 cc, 90-bhp engine and a 4.1 to one rear axle ratio, the price of the Mark II is only $5 more than that of the 1600 which it replaces. Without a doubt it's the best MG yet; as one enthusiast commented, ". . . it's the most fun I've had driving an MG since my TC." After more than 3000 miles of Road Researching the car we can only say we agree emphatically.

Looking only slightly different from its predecessors, the Mark II features a "pre-bashed" grille in which the applique grille-surround is retained in outside shape and size but with curved inner bars which are more nearly vertical. The resulting platform should be a likely place for mounting driving lights. The rear fender line is denuded of the bulky 1600 taillights and horizontal units are mounted inboard below the trunk lid. The dashboard now has the leatherette covering and bright metal edging of the coupes and an anti-reflective leatherette cowl covering. On former models the dash was painted and with some body colors, notably white, there appeared to be a "mirage" floating at eye level as the cowl reflected in the windshield.

One thing that fortunately has not changed is the almost impeccable roadholding and handling of the MGA. With added useful power, the car's maximum in a given corner is up-rated yet the steering, suspension and brakes are still more than adequate to cope with the toughest situations.

THE FIRST OF THE MGAS

While it would be interesting and enlightening to trace the development of the make from the first MG (a hopped-up Morris Cowley) built in 1923 by the late Cecil Kimber of Morris Garages (from which the name was taken), it would fill volumes . . . and already has. More to the point is the story of the MGA series cars. These represented a completed break with past MG traditions in design if not concept. Perhaps that's why the "A" suffix was chosen, although some claim it's because the engine used is directly related to Austin power units. MG fell heir to this bit of machinery after the British Motor Corporation was formed in 1952 through the merger of Morris Motors and Austin of England.

The first of the MGAs was the 1500, built between 1955 and 1958. The earliest of these (recognizable by the single rear window) arrived toward the end of 1955. Altogether 58,750 of these cars were built. With its 68-bhp engine the MGA opened new experiences in speed, acceleration and roadholding to MG veterans and novices alike. However, it was realized the product could be improved and minor but significant changes were made, beginning with the mid-1957 cars. These included a change in engine type at car number 61504 when the 15GB engine was replaced by the 15GD.

The horsepower had already been upped to 72 when, earlier, the compression rings, the oil rings and the valve guides were changed to reduce oil consumption, a full-flow oil filter was specified and a revised distributor (Lucas DM2 "pre-tilt") was installed. This latter item featured easier point adjustment. In addition, the front spring coils were made of heavier-diameter wire for better control and the shock absorber valving was stiffened. Heavier clutch pressure plate springs were introduced at engine number 16225 and the starter and generator were changed at car number 487, the latter being the "windowless yoke" type which helped keep dirt and moisture out, but which required almost complete disassembly for checking the brushes about every 12,000 miles. The improved MGA 1500 was recognizable externally by the three-piece rear window which afforded better top-up vision, and by better-marked instruments.

ENTER THE 1600

The major step was the MGA 1600, the first of 31,086 built in 1959-1960. Externally the only differences from

the 1500s were larger flat-lensed sidelights and revamped taillights in which the turn signal was placed above the taillight/brake unit. A bit of script was added to the sides of the hood and trunk lid stating the car was a 1600, and the disc wheels were changed to accommodate the new disc brakes used on the front wheels.

The only cockpit changes were the adoption of sliding plastic side curtains in lieu of the lift-the-flap type of the 1500, the addition of a third top hold-down at the center of the windshield, added weatherproofing under the windshield, and the use of a flap to fasten the top's side curtain openings to the top framework. The simpler-fastening tonneau cover (with its reduced number of fasteners) was retained from the latest 1500s.

The 3.5-inch stroke was unchanged, but the bore was increased from 2.875 to 2.968 inches. The engine type designation was now 16GA as the displacement was boosted from 1489 cc (90.88 cubic inches) to 1588 cc (96.9 cubic inches). The power was increased from 72 bhp at 5500 rpm to 78 at 5500 and torque figures went from 77.4 pound-feet at 3500 rpm to 87 at 3800. The 8.3 to one compression ratio was unchanged but the connecting rod bearings were narrowed slightly as the crankshaft web was stiffened for the greater power. Valve lift was decreased slightly and the length of the exhaust valve guide was increased while its widened inside diameter was kept from late 1500 cc cars when the valve stem clearance specification was changed. The crankshaft, piston, valve spring and camshaft specs were unchanged. The oil pump was modified as to specification but not design with the result that the minimum and maximum hot oil pressure figures were reduced from 30-80 pounds per square inch to 15-50. Needles in the H4 1½-inch SU carburetors were changed from GS to No. 6. Ignition timing was changed from 7° BTDC to 6° BTDC.

The ten-inch-diameter front drum brakes were scrapped in favor of 11-inch discs, still using a Lockheed system. The brake/clutch master cylinder was changed for easier filling and greater capacity and the specified brake lining was changed from Ferodo DM12 to DON24. Oil capacity of the rear axle was cut from 3.25 U.S. pints to 2.4 pints and the modified rear axle outer seal of late 1500 cars was kept to reduce chances of leakage.

The factory-listed curb weight increased from 1988 pounds to 2016 and the turning circle increased from 28 feet to 30.6 feet, to the chagrin of gymkhana drivers.

STEADY DEVELOPMENT

Other miscellaneous running changes were incorporated in 1500 and 1600 MGAs at various times. These included a timing chain tensioner starting with engine 259. At engine 3289 the transmission mounting plate was machined differently to keep any engine oil, escaping through the rear bearing seal, from entering the clutch. Tappets and pushrods, having increased spherical diameter on the ball end of the pushrods and the seats of the tappets, were introduced at engine 5504. At engine 5682 a chrome top ring was introduced for longer life and less oil consumption. Other changes included a modified crankshaft oil return thread starting with engine 15GB/6615, modified pistons and stronger wrist pins starting at engine 15GB/U/H38484. These are interchangeable with older types but only as complete sets.

In line with this recommendation from MG, it might be well to clarify the difference between the 15GB and 15GD (1500) engines from which the 16GA (1600) engine was derived. The change to the 15GD engine was at car number 61504 although some earlier ones had this engine. It differs in the placement of the starter higher on the transmission mounting plate as BMC standardized starter location. Modifications were also made to the transmission itself, the right-hand toeboard, the transmission cover and the drive shaft. As a result, if you have an earlier 1500 MGA (15GB block) and would like to install a later type (15GD) or a 1600 power plant (16GA), the factory advises against it, although by using a suitable adaptor plate it can be done. The main gearbox change, internally, was the switch to a different third motion shaft and drive shaft so that the forward universal joint comes in front of the sliding splines which formerly were in the transmission extension itself. This arrangement is in line with common BMC practice.

There were changes in the water pump to use a one-piece bearing and starting with car No. 24954 an additional accelerator return spring was introduced. Later 1500 cc cars used a modified clutch release lever and an early change was the use of left-hand thread on the left-hand rear axle hub nuts with right-hand threads on the other side.

Although this recital of specifications may be pedantic, it's done with good reason: to underscore the MG policy of *constant* improvement, to demonstrate that while the various MGAs may appear only slightly different they are in fact quite changed from former cars, and to assure readers that the Mark II is new, but not *that* new.

IMPROVING THE BREED

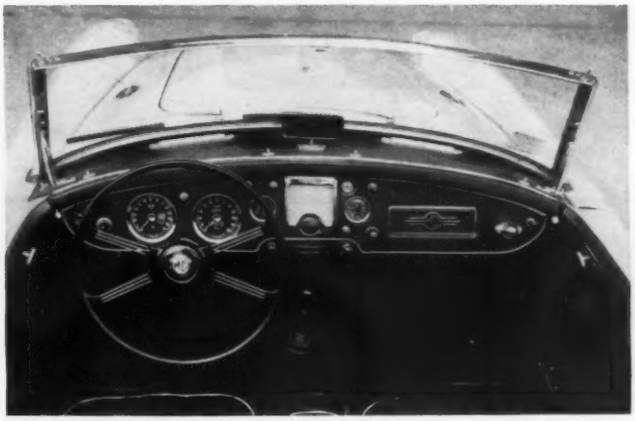
What's been done in producing the Mark II parallels what was accomplished with the 1500 when the 1600 was devised. The car as such will make current MG drivers feel right at home, yet they will enjoy the results of engineering refinements. While the original change to the 1600 did not increase top speed appreciably compared to the 1500, it did improve acceleration. The time to 70 mph was cut from 19.3 to 17.8 seconds. With the Mark II acceleration is even guttier, cruising speed is raised significantly and top speed is well within the cited goals. All this is accomplished with engine changes, the only other mechanical change being the switch to the 4.1 to one rear end ratio from the 4.3 cogs in the 1500 and 1600s. This coupled with the ten percent displacement increase and the 19 percent power boost gives the new MGA a true deep-breathing, seven-league-boots (*Continued on page 62*)

PHOTOGRAPHY: DOLIN

Checking the level of the two six-volt batteries behind the seats is a tedious but essential job, requiring removal of the parcel platform.

The Mark II's grille retains a family resemblance to earlier models by using the traditional octagon and shape but has a more integral look.

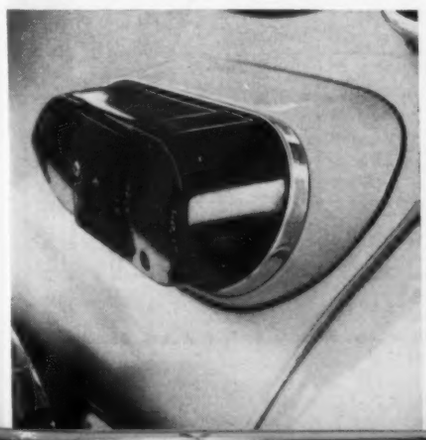
The Mark II's tool kit contains fewer wrenches and such than former models but features a ratchet jack, improved lug wrench and hub cap puller.



The leatherette facing gives the dashboard a more finished appearance while the cowl covering eliminates eye-level ghosts in the windshield.

A fleet, ready-to-go stance is enhanced with the new rear-end treatment. The effect makes Mk. IIs look longer and lower than 1500 and 1600s.

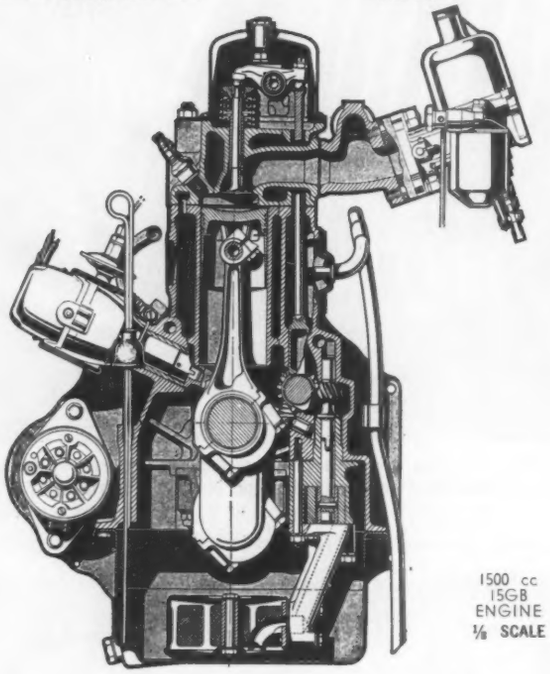
An improvement over the 1600's taillights, the horizontal units on the Mk. II still don't have the built-in look of those on other BMC autos.



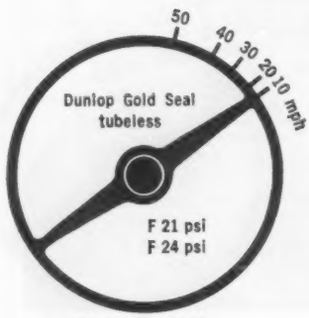
Road Research Report: MGA 1600 Mark II

Importer: Hambro Automotive Corp.
27 West 57th Street
New York 19, N.Y.

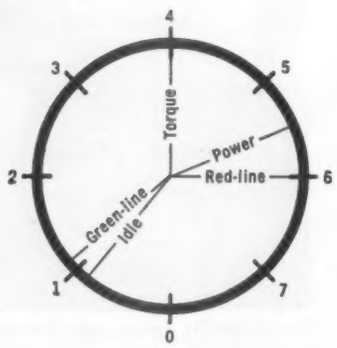
Number of U.S. dealers: 650 in 50 states
Planned annual production: 15,000
Dollar value of spare parts in U.S.: $5,000,000



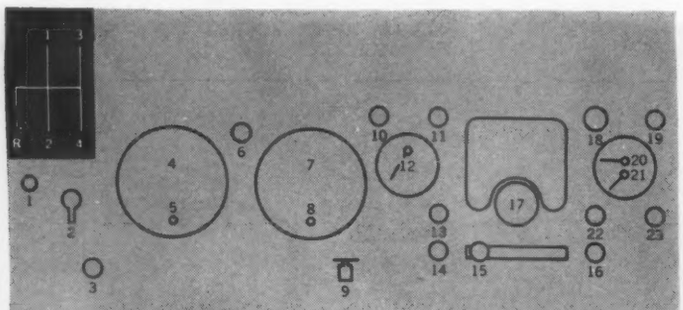
1500 cc
15GB
ENGINE
⅛ SCALE



Steering Behavior
Wheel position to maintain 400-foot circle at speeds indicated.



Engine Flexibility
RPM in thousands



1 Turn signal indicator
2 Turn signal switch
3 Hood release
4 Tachometer
5 Ignition warning light
6 Instrument light rheostat
7 Speedometer
8 High beam indicator
9 Odometer reset knob
10 Fog light switch
11 Headlight switch
12 Fuel gauge
13 Starter
14 Air vent control
15 Heater temperature control and blower switch
16 Defroster control
17 Horn
18 Ignition switch
19 Wiper switch
20 Oil pressure gauge
21 Water temperature gauge
22 Choke
23 Windshield washer

PRICES:

Basic price, POE East and Gulf coasts:	
Roadster with disc wheels	$2449
Coupe with disc wheels	2685
Options fitted on most cars imported:	
Heater/Defroster	65
Windshield washer	15
Tonneau cover	35
Total price of car as tested (at New York)	2564
Other regular production options:	
Whitewall tires	35
Wire wheels	100
Detachable hard top	275
5.90 x 15 Dunlop Roadspeed tires	45
Four-wheel disc brakes, knock-off disc wheels and Roadspeed tires	250
4.55 to one rear axle ratio	50
Other options available through local dealer:	
Thermostat bypass (11G176)	1
SU H6 1¾-inch carburetor (AUC780)	113
Intake manifold for two of above (AEH200)	23
Set heavy-duty valve springs (1H1111 & 1H1112)	11
Oil cooler kit, complete (8G2282)	94
8-inch competition clutch assembly (AHH5457)	121
Parts for close-ratio gearbox conversion:	
First motion shaft (1H3297)	30
Laygear (1H3298)	35
Second speed gear (1H3299)	18
Third speed gear (1H3300)	17
3.90 ring and pinion set (ATB7236)	68
4.30 ring and pinion set (ATB7156)	37
4.30 complete assembly (ATB7283)	84
4.55 ring and pinion set (ATB7146)	34
4.55 complete assembly (ATB7280)	84
16½-inch wood rim, light alloy steering wheel (AHH5800)	50
Andrex front shock absorbers (AHH5609 & AHH5610)	48
60-spoke wire wheel, light alloy rim (AHH8000)	119
60-spoke wire wheel, steel rim (AHH8001)	38
25-gallon fuel tank (AHH5990) with accessories	104
18-gallon fuel tank (AHH5863) with accessories	163
Quick-action filler cap (AHH5498)	20
Hood strap (AHH5518)	5
Competition windshield assembly (AFH2591)	89
Parts needed to install front anti-roll bar	60
Shop manual, 1600 (AKD600B) and Mk II supplement (AKD1982)	11
Tuning manual, 1600 (AKD819A)	1

OPERATING SCHEDULE:

Fuel recommended	Premium
Mileage	21-28 mpg
Range on 12-gallon tank	260-335 miles
Oil recommended	SAE 10W/30
Crankcase capacity	3.9 quarts (4.5 with filter change)
Change at intervals of	3000 miles
Number of grease fittings	10
Lubrication interval	1000 miles

ENGINE: (BMC "B" series)

Displacement	99 cu in, 1622 cc
Dimensions	Four cyl, 3.00 in bore, 3.50 in stroke
Valve gear:	Pushrod-operated vertical overhead valves, stamped rockers.
Compression ratio	8.9 to one
Power (SAE)	90 bhp @ 5500 rpm
Torque	97 lb-ft @ 4000 rpm
Usable range of engine speeds	1100-6000 rpm
Corrected piston speed at 5500 rpm	2970 fpm

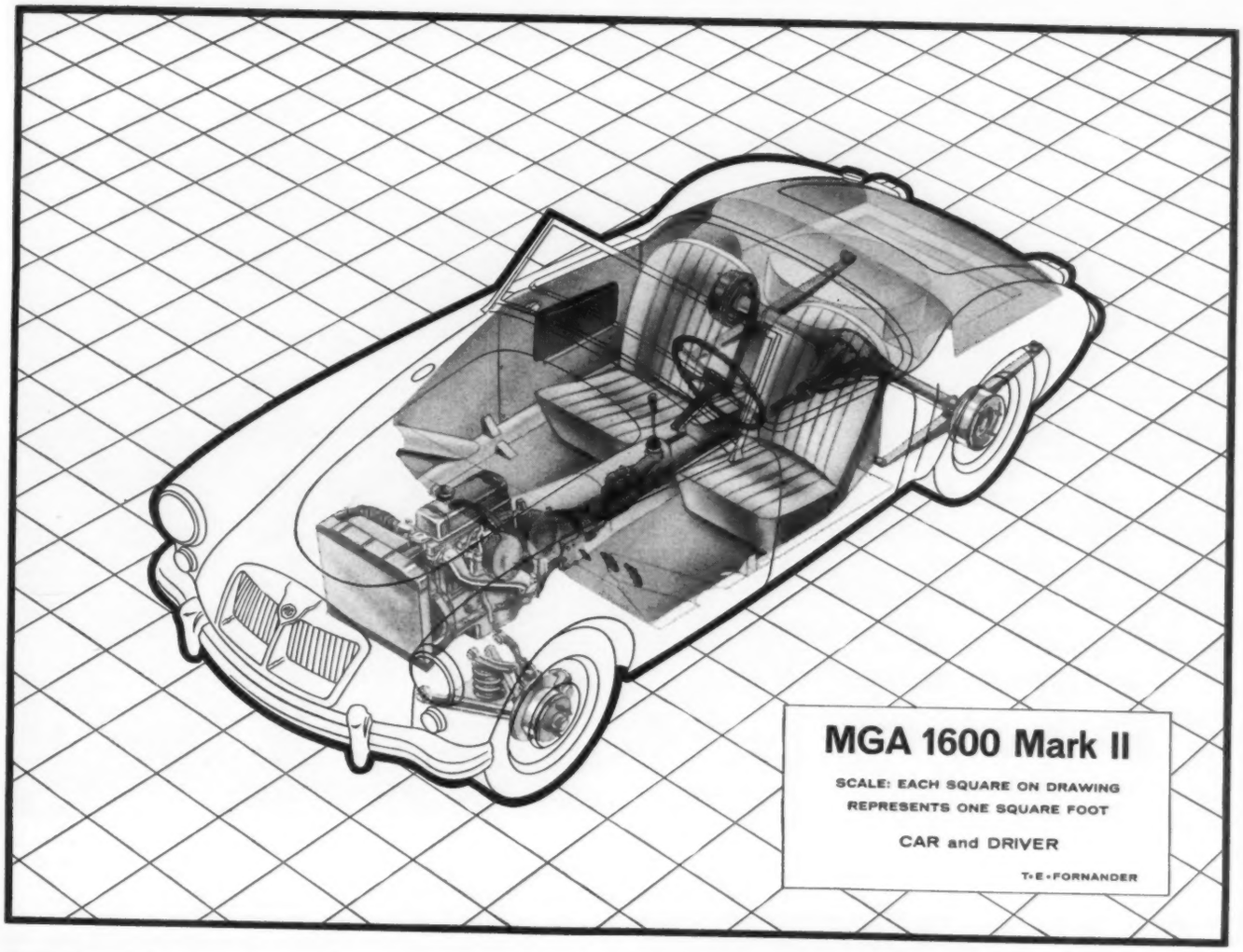
CHASSIS:

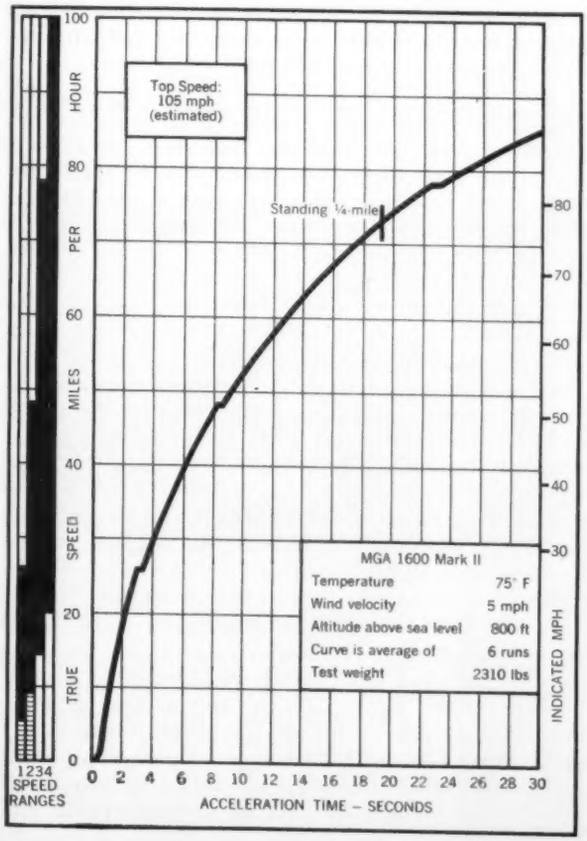
Wheelbase	94.0 in
Tread	F 47.5, R 48.8 in
Length	156.0 in
Ground clearance	5.5 in
Suspension:	F, ind., coil spring, wishbones; R, rigid axle, semi-elliptic springs
Turns, lock to lock	2.7
Turning circle diameter between curbs	31 ft
Tire and rim size	5.60 x 15, 15 x 4J
Pressures recommended:	Normal, F 21, R 24 psi; Fast driving, F 23, R 26 psi
Brakes: type, swept area	F 11 in disc, R 10 in drum; 350 sq in
Curb weight (full tank)	2044 lbs
Percentage on driving wheels	48%

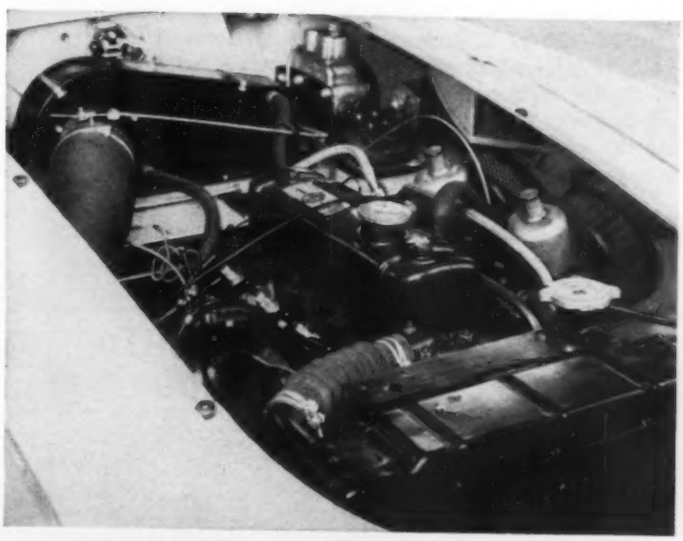
DRIVE TRAIN: (BMC "B" series)

Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	4.76		19.52	—3.8
1st	No	3.64	64%	14.95	4.9
2nd	Yes	2.22	62%	9.08	8.2
3rd	Yes	1.37	37%	5.62	13.0
4th	Yes	1.00		4.10	17.9
Optional close-ratio gearbox:					
Rev	No	3.20		13.13	—5.6
1st	No	2.44	51%	10.00	7.3
2nd	Yes	1.62	28%	6.64	11.0
3rd	Yes	1.27	27%	5.20	14.2
4th	Yes	1.00		4.10	17.9

Final drive ratios: 4.10 to one standard; 4.55, 4.30 and 3.90 optional.


MGA 1600 Mark II
SCALE: EACH SQUARE ON DRAWING REPRESENTS ONE SQUARE FOOT
CAR and DRIVER
T•E•FORNANDER


Top Speed: 105 mph (estimated)
Standing ¼-mile
MGA 1600 Mark II
Temperature 75° F
Wind velocity 5 mph
Altitude above sea level 800 ft
Curve is average of 6 runs
Test weight 2310 lbs
TRUE SPEED MILES PER HOUR
INDICATED MPH
1234 SPEED RANGES
ACCELERATION TIME – SECONDS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
0 20 40 60 80 100
30 40 50 60 70 80



NJ

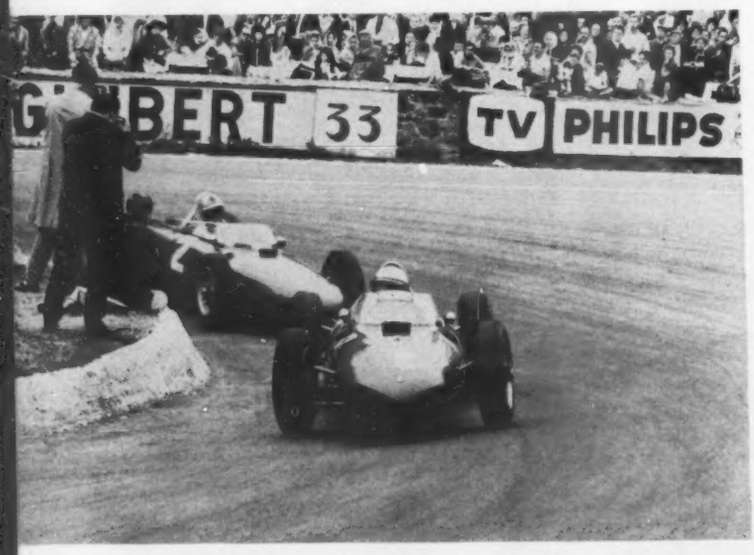
Jack Lewis presses his Cooper to the limit at La Source hairpin in an attempt to stave off Graham Hill's B.R.M. which retired on the 19th lap. Below: Maurice Trintignant coasts the Scuderia Serenissima Cooper into the pits after picking up Innes Ireland whose Lotus blew up its engine.

PHIL EXCELS AT SPA

by Peter Coltrin

Phil Hill and the fabulous Ferraris do it again, finishing 1, 2, 3, 4 in a hot-paced Belgian G.P.

► Probably more than any other course on the schedule of *Grandes Epreuves,* Spa-Francorchamps puts a premium on driving ability and horsepower. This year Scuderia Ferrari came to Belgium loaded with both in the form of Phil Hill, Wolfgang von Trips and Richie Ginther, equipped with 120° V6-engined cars, along with Olivier Gendebien driving a bright Belgian-racing-yellow V6 65°-engined version entered by Equipe Nationale Belge. They finished in that order in the first four places, miles ahead of the rest of the field. To say the least, it was a convincing demonstration of Ferrari might which left their rivals rather shaken and hoping desperately for the quick and successful appearance of their respective new engines.



Phil Hill and Taffy von Trips, though far ahead of the rest of the field, drove the 315-mile G.P. as if they were running in a club sprint event.

As at Monte Carlo and Zandvoort this season, entrants were divided into two categories: those assured of a place on the starting grid and those having to qualify. The Belgian club selected sixteen drivers for the assured list and left eight additional openings to be qualified for.

That the Ferraris would be the cars to beat on this 8.76-mile high-speed course was a foregone conclusion, and the two practice sessions bore this out. Both days saw Ferraris record the three best times. The second day the three 120° cars were fitted with a much higher gear ratio. Although this ratio put the cars down some 800 rpm in top (fifth) gear on the long straights (9100-9800 rpm), it was decided in the interests of reliability to leave it in. The heavier and slower-revving 65°-engined car of Gendebien was left with the lower ratio.

Toward the end of the final practice session Phil Hill, with the new ratio installed, went out and really got cracking. He set the fastest practice lap with a time of 3:59.3, comparing favorably with last year's fastest practice lap of 3:50.0 set by Brabham in a 2.5-liter. Von Trips was close behind his teammate with a time of 4:00.1, followed by Gendebien's third-fastest time of 4:03.0. Ginther, this being his first time at Spa, was busy learning his way around, and found the course to his liking. He was the only Ferrari driver who had to qualify and he did this easily, gaining fifth best time right behind John Surtees.

Surtees was evidently as comfortable at Spa on four wheels as on two, and was doing extremely well in both of the Yeoman Credit Racing Team Coopers. One of these was the special-bodied streamlined car (C/D, August, 1961) with a Coventry Climax Mk. I engine coupled to a Colotti gearbox. Because of alterations to this car's bodywork it was not possible to mount the Mk. II Climax engine and

Cooper gearbox, so a second, normal-bodied Cooper was brought along in case it was felt the Mk. II's extra power would offset the difference in streamlining. It did, and this was the car used in the race.

Next fastest in practice were the B.R.M.s of Graham Hill and Tony Brooks; these cars appeared to be the best-handling machines at Spa. These two drivers confined most of their practicing to the first day in order to conserve their engines. Brooks went out briefly on the second day in the hopes of slipstreaming a Ferrari; Moss also tried this. It seems the speed differential between the Italian cars and theirs was too great for them to tuck in in time for a tow — or perhaps the Ferrari drivers weren't being cooperative!

Moss, eighth fastest in practice, was driving the Walker Lotus which had been fitted with a more shapely body. This car seemed to be down on power, not sounding as sharply or going as well as possible.

Behind Moss in the starting lineup came the two factory Porsches of Bonnier and Gurney. Porsche, having temporarily abandoned fuel injection and their new chassis, and not yet ready with their flat eight, resurrected three 1960 cars. The third went to private entrant Godin de Beaufort, who qualified behind Brabham, Camoradi's Gregory, and private entrant Jack Lewis, and ahead of Bruce McLaren.

The Coopers, with the exception of that of Surtees, all seemed to have less power, even though the team cars had the Mk. II Climax engines. McLaren's carburetion was never right and a pit stop during the race revealed why; a mis-machined internal surface in one of the carburetors caused him to retire. Of all the Coopers the Surtees Yeoman Credit cars appeared and sounded the best-prepared.

Team Lotus was also having troubles during practice, with Colin Chapman busy with masking tape and tin snips cutting new carburetor air intake holes in the bodywork of Clark's and Ireland's cars and masking over old ones in an effort to improve the Lotuses' performances.

After one of the Equipe Nationale Belge Emerysons-Maseratis broke its chassis in practice, it was decided not to race either one. Mairesse and Bianchi, having assured starts, "rented" the Lotuses of Marsh and Seidel, who were far down on the list of qualifiers. Since only the top three of those who had to qualify, i.e., Ginther, Gregory and Lewis, also qualified for full starting money, Marsh and Seidel probably figured it was more profitable to paint their cars yellow and go into the rent-a-car business than race with only minimal starting money.

Besides Ferrari, two other red cars from Modena were entered to complete the field of starters: the Centro-Sud Cooper-Maserati with the young Italian driver Bandini, and Scuderia Serenissima's Cooper driven by the veteran Trintignant.

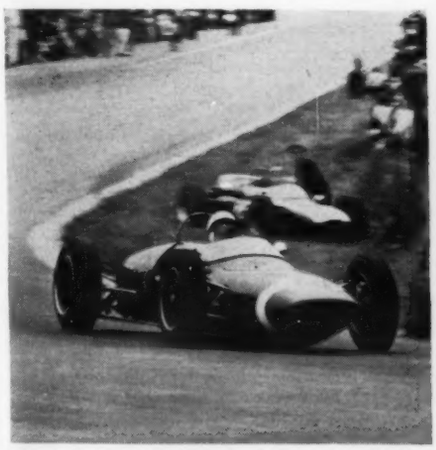
The only mishap during the weekend happened at the beginning of the first training period when Cliff Allison, two-thirds around his first lap, crashed his U.D.T. Lotus on a left-hander. The remembrance of last year's tragic race had everyone quite worried until it was announced that Allison, having been thrown clear, had escaped with fractured legs. The cause of the accident was not determined. Examination of the car afterwards makes one wonder about the advantage or advisability of the flimsy and unsupported roll bars seen on many of the Formula 1 cars these days. This one was smashed flat over the cam covers.

Twenty-one cars lined up for the start of the 20th Grand Prix of Belgium on Sunday afternoon. With the drop of the flag at three o'clock, Graham Hill, starting from the third row, shot his B.R.M. through the startled Ferrari ranks to take the lead past L'Eau Rouge and up the hill. His lead was short-lived for he was soon caught and passed, and at the end of the first lap the Ferraris of (*Continued on page 67*)

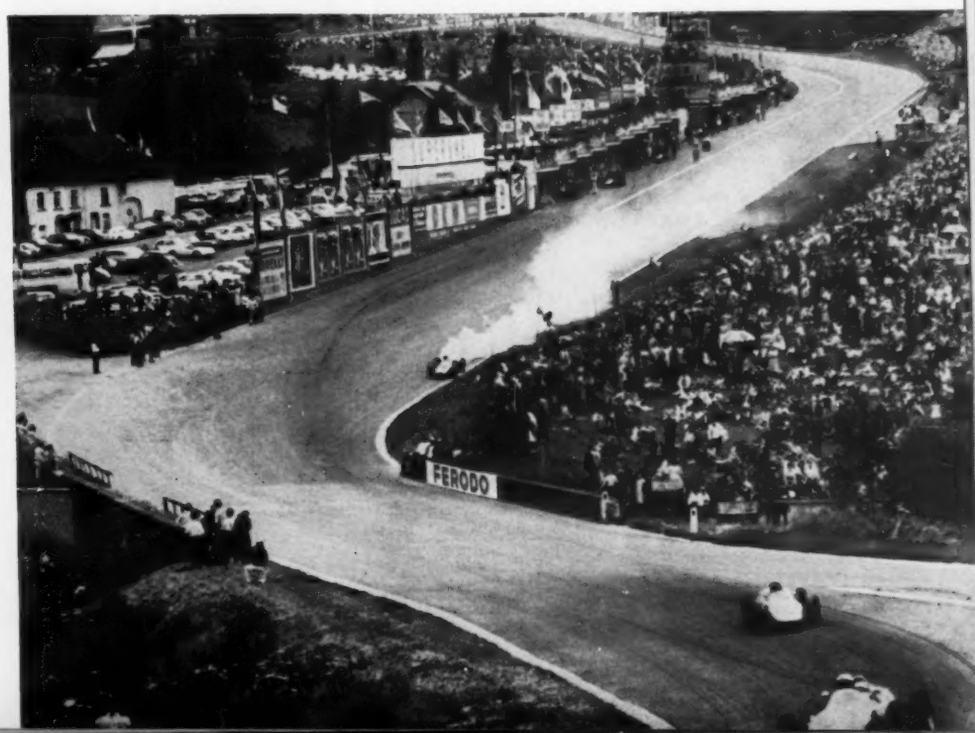
Belgian Grand Prix
June 18, 1961, Spa-Francorchamps
36 laps, 8.76 miles per lap

1	P. Hill	Ferrari F1/61-120°	2:03:03.8
2	von Trips	Ferrari F1/61-120°	(127.87 mph)
3	Ginther	Ferrari F1/61-120°	2:03:04.5
4	Gendebien	Ferrari F1/61-65°	2:03:23.3
5	Surtees	Cooper-Climax	2:03:49.4
6	Gurney	Porsche	2:04:30.6
7	Bonnier	Porsche	2:04:34.8
8	Moss	Lotus-Climax	2:05:50.9
9	Lewis	Cooper-Climax	2:06:59.4
10	Gregory	Cooper-Climax	1 lap behind
11	deBeaufort	Porsche	1 lap behind
12	Clark	Lotus-Climax	2 laps behind
13	Brooks	B.R.M.-Climax	6 laps behind

Fastest Lap
Ginther, Ferrari, 3:59.8, 131.5 mph



Moss, in the restyled but apparently ailing Walker Lotus, placed eighth in practice times and eighth in the final standings of the race.



At right, the Mk. II Climax engine in Brabham's Cooper blows up near the pits while the two Porsches of Dan Gurney and Joe Bonnier speed on.

FANTASTIC FRENCH G.P.

by Jesse Alexander

Despite a shut-out of the factory drivers, Ferrari still won the mid-season French G.P. as newcomer Baghetti outdragged Dan Gurney on the last lap.

► With the 1961 Grand Prix season half over, the dominance of the Ferraris has been the overriding feature this spring and summer in Europe. The first mechanical failures of the new Ferrari 120-degree V6 engine occurred at Reims, however, with both Trips and Ginther retiring with overheating problems and dropping oil pressure. But the race was still won by a Ferrari, cool newcomer Giancarlo Baghetti taking the checkered flag slightly ahead of Dan Gurney. Aside from the two Porsches of Gurney and Bonnier there was absolutely no opposition to the Italian car. Entered at Reims by FISA, Baghetti's car was the same one he used to win at Syracuse and Naples: the original rear-engined Ferrari that saw so much development work and competition last year. It was fitted with the 65° engine.

As usual it was hot at Reims; skies were clear and a broiling sun beat down on the fast track (cockpit temperatures were in the neighborhood of 150 degrees F). Practice saw Phil Hill set fastest lap (2:24.9, comparing with the fastest practice lap last year of exactly 2:16.8 by Brabham, Cooper-Climax). Ginther and Trips were second and third fastest. The considerable difference in speeds between the new 1.5-liter Formula cars and last year's 2.5-liter engines is noticeable and the Reims track has obviously lost much of its challenge. The once highly dangerous Gueux curve is now easily flat-out in the smaller-engined cars, while before it took a Fangio or a Hawthorn to go through it at full speed without more than just a little sweating on the driver's part. The only interesting part left is prior to the Muizon corner, halfway around in an area not accessible to spectators.

Big disappointment was the continued absence of the new Porsche opposed eight-cylinder engine, for the German cars were all last year's models. It is common knowledge that development of the new powerplant has been held up by parts deliveries, but also the engine just is not putting out anywhere near the anticipated horsepower. The Porsche team came to Reims with serious doubts as to the feasibility or wisdom of the effort but were rewarded by a near-win by Dan Gurney, who in the closing stages of the race tried his best to beat Baghetti's Ferrari across the line but the considerable bhp advantage of the red car made it impossible for him to be passed up the main straightaway. Gurney was apparently not fully aware of the way the situation developed with both the Ferraris of Trips and Ginther retired and Hill at the back of the field; had he been receiving complete information from the pits he might have been able to do something. The performance of the really outdated Porsches was impressive — but not so much as that of their courageous drivers.

Phil Hill may have lost his chance to be 1961 World Champion. He jumped into a comfortable lead followed closely by von Trips and Ginther. It was understood that the race was to have been won by Trips in the pre-arranged plans of the Ferrari team and Hill gave the lead to him on their 13th lap, a position Trips was able to hold for only five more rounds when he coasted into the pits with an overheating engine; mechanics looked quickly beneath the hood but just as quickly closed it again and pushed the car away. Hill and Ginther continued to circulate comfortably and Phil was praying that this might be his day — "lady luck was really shining" as he said later. The track was slippery, especially at Thillois where gravel is always a problem. Unfortunately Phil spun his Ferrari twice at that corner, the second time being rammed by Moss's Lotus. The impact was severe enough to jar his feet off the pedals and the engine died. It's required that the new F.1 cars have self-starters but Phil's refused to work and he had to push. Finally the engine caught and he was on his way but without his clear-cut lead.

Aside from the performance of Baghetti, the effort Dan Gurney put out in a most outmoded automobile was pretty

terrific. Dan really "tigered," beating out teammate Bonnier noticeably and having a go at Baghetti in the last few laps. Dan actually got into the lead on the 46th lap – on the next lap around Baghetti's car was out in front, the tiny silver Porsche tucked in behind. As a matter of fact this was the case throughout most of the race and practice as well, for the red-hot Ferraris were excellent tow cars. Moss said he once picked up four seconds and more revs than he really wanted to when in a Ferrari's slipstream. During practice the green cars so swarmed around the Ferraris looking for a tow that each red car looked, in Phil Hill's words, "like a bitch in heat."

There were 25 cars in the Reims field – less than half finished. We watched the entire race from a different vantage point this year, from the tall scoreboard at Muizon corner. In the shade and with a cool breeze wafting through, it could not have been a better spot. The spectacle of Grand Prix racing is still one of the most exciting in the world and one of the most colorful. Reims is especially beautiful, with the vast waving fields of barley and wheat that surround the track and seem to close in on it at times.

There was excitement galore at Muizon this year, for in the opening stages spilling fuel from over-filled tanks made the track slippery and there were numerous spins. Racing neck-and-neck with Jack Brabham as they approached Muizon, Dutchman Carel de Beaufort tried to pass on the outside but left his braking too late, got up on the grass verge and was aimed directly at a solid concrete road marker until he was able to sort things out at the last minute. Innes Ireland and Jim Clark did a hard fighting job; Innes got a bit wild at one point and climbed the grass verge on the inside of Muizon, distributing dirt and dry grass which a harried Frenchman was forced to sweep up between laps.

–JLA

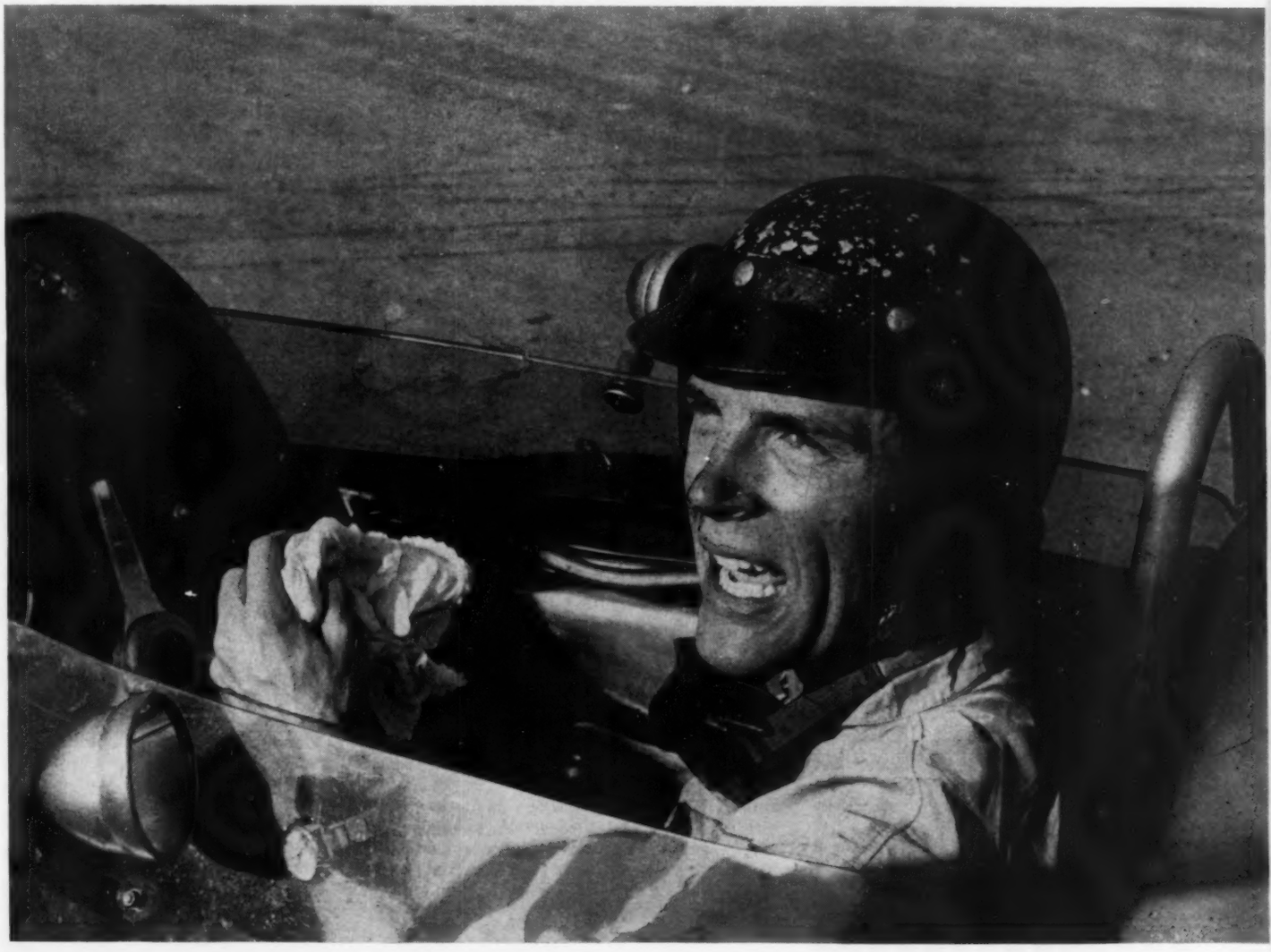
French Grand Prix
July 2, 1961, Reims
50 laps, 5.16 miles per lap

1	Baghetti	Ferrari F2/60-65°	2:14:17.5
2	Gurney	Porsche	(119.54 mph)
3	Clark	Lotus-Climax	2:14:17.6
4	Ireland	Lotus-Climax	2:15:18.6
5	McLaren	Cooper-Climax	2:15:27.8
6	G. Hill	B.R.M.-Climax	2:15:59.3
7	Bonnier	Porsche	2:15:59.4
8	Salvadori	Cooper-Climax	2:17:32.9
9	P. Hill	Ferrari	1 lap behind
10	Taylor	Cooper-Climax	2 laps behind
11	May	Lotus-Climax	3 laps behind
12	Gregory	Cooper-Climax	4 laps behind
13	Trintignant	Cooper-Maserati	9 laps behind

Fastest Lap

Moss, Lotus-Climax, 2:30.4, 123.48 mph

Dan Gurney's pebble-slashed face reflects the fierceness of his duel with Baghetti, the duo's second spine-tingling tangle this season.



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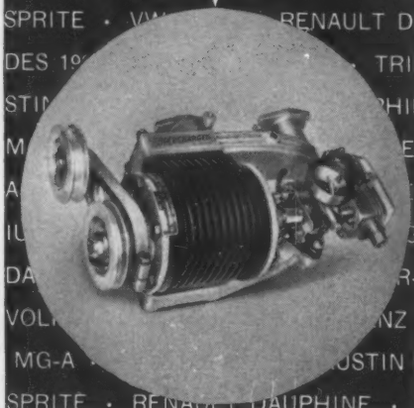

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ROAD RESEARCH REPORT: MGA 1600 MARK II

Continued from page 54

feel. The theoretical top speed is now some six percent over the 1600's with *only* the engine changes. Figuring the usefulness of the new rear axle ratio, MG places the top speed up nine percent, i.e. over 107 mph, using the optional hardtop.

The 3.5-inch stroke is carried through from the 1500s, but the bore is now an even three inches. The resultant displacement is 1622 cc (99 cubic inches). The 8.3 to one compression ratio of the 1500 and 1600 has been increased to 8.9 in the Mark II and although premium fuel is specified we experienced some running-on which was eliminated by using superpremium. The higher compression ratio has been accompanied by a slight change in the combustion chamber contours which, the factory claims, should eliminate any pinging on premium fuel. We did not find any preignition – just the annoying running-on. Fuel consumption was reasonable in relation to the car's performance.

The intake valve size was increased from 35.1 mm to 39.67 while exhaust valves went from 32.54 to 34.13. Material used in the valves has been changed to reduce chances of failure under the increased loads and the intake ports have been increased in size. The wrist pin has also been increased in diameter from $^{11}/_{16}$ inch to $^{3}/_{4}$ inch for 18 percent more stiffness. The web of the con rod H-section has been increased by $^{1}/_{16}$ inch, but the bearing size is unchanged. Main bearings however have been narrowed as the crankshaft webs have again been thickened by $^{1}/_{8}$ inch. A further change in specifications is a new form of cylinder head gasket consisting of 0.15 inch of asbestos faced with a 0.066-inch copper sheet turned over to seal the water joints. It is based on a 0.009-inch steel sheet which is turned over to make a fire wall around the periphery between the bore and head.

RAPID RESPONSE

Our test car, a light blue (one of six colors available) roadster with disc wheels, lived up to the MGA tradition of fast starting. We have found with MGAs, 1500, 1600 and now the Mark II, that the choke need be used only in the coldest weather. Ours idled a bit faster than the usual 900 rpm and ran roughly when temperatures got into the 90s in traffic. Nevertheless it never overheated, the highest temperature being about 190° with running temperature about 160-165°. Warmup was rapid and for winter use a 185° thermostat is available either from Smiths or one of the American firms. An option, incidentally, is a radiator blind that may be controlled from the cockpit.

The responsiveness was excellent, even with the Rube Goldberg accelerator linkage which starts, naturally, on a left-hand-drive car, on the left side of the transmission tunnel, uses a bar to cross the tunnel and then connects to a Bowden cable which recrosses to the left side of the engine where the carbs are mounted. A good, crisp-feeling pedal is easy to retain by adjusting the cable length at the carbs. One drawback of the system is that the pressure on the cable as it crosses over the valve cover may cause the latter to wear. One way to eliminate this is to glue two small pieces of cork on the cover to take the wear. The engine was quiet with the typical pushrod o.h.v. whir on acceleration and cruising. There was little vibration except at lowest rpm and then only when the underhood temperatures were very high.

The clutch was free from stiffness, but took hold a bit high. It was positive and even under violent use showed no slip. There have been owners' reports of what sounds like a slipping clutch at high-rpm shifts but these may usually be traced to clutch slave cylinders that are sticking slightly. The flywheel on the Mark II is eight pounds lighter than before.

COGS AND STOPPING

The traditional H-pattern shift linkage is positive, requiring only small motions to effect a shift. The amount of force needed remained quite high even after the odometer on our car passed the 3000 mile mark. The feel is solid and crisp, but a little care should be exercised to avoid shifting into reverse when downshifting from third to second. The initial tightness of BMC boxes seems to be an almost universal complaint. Fortunately there is one foolproof remedy: constant use and great patience.

All of the indirect gears produce a noticeable amount of whine, but it's not objectionable. The rear axle is quiet although you may find it will make a clunk if you have been going forward and then stop and back up. This is a natural phenomenon as the splines on the drive shaft have built-in slackness. The handiness of the gearshift is so natural it's almost possible to overlook. The knob is not exactly hand-filling, but there's no danger of ramming your fist into the dashboard. The only annoying characteristic about the shift is the balking that sometimes occurs when trying to engage the non-synchro first gear when stopped.

The MG has always been "over-equipped" in the stopping department. With the Lockheed disc/drum system, the word "fade" just doesn't enter the picture. Adjustments are few and far between. The discs adjust themselves and the rear ones seem to be good for thousands of miles before needing any attention even under the most abusive right foot. A low pedal is

phenomenon that sometimes may be encountered, but according to our experience the potency is still there and the dead-center stoppability doesn't change. This low-pedal feel may usually be traced to air in the system or a faulty master cylinder which permits some fluid blow-by. The unit should be replaced or rebuilt. The disc units seem to shoulder most of the braking load and experienced MGA drivers advise a bit of caution to prevent locking up the front wheels on slippery surfaces. Pad life for the discs should be equal to that of the riveted drum linings and of course replacement is much simpler. Pads should be replaced when they have worn to $^{1}/_{16}$ inch, visible through the caliper units.

IT REALLY DOES PERFORM

The acceleration of the Mark II, if not breath-taking, is certainly eye-opening. We were able to run comparative tests between the well-seasoned, but unmodified, 1600 owned by Ed Gottschall of Abingdon (Pennsylvania, not "On-Thames") and the Mark II. Before referring to the stopwatch or direct drags, it *appeared* the 1600 felt more nimble. The shifting was smoother (more miles on it) and the ride felt softer (things had settled a bit). In addition, the 1600 seemed to rev up more freely (we attributed this to two things: the added mileage on the car and the use of an Abarth muffler). However, our senses lied.

Timed 0 to 60 runs showed the Mark II to be considerably faster, up to 3.4 seconds faster, and it was about a second quicker in the quarter-mile. Using a 3500 to 4000 rpm takeoff there was virtually no wheel spin and no rear axle judder. We tried side-by-side starts and the Mark II walked away. Just for fun we started the 1600 four car-lengths ahead. By the time it had reached about 60 mph the Mark II had caught it and was pulling away. By the end of the quarter mile the Mark II had picked up another full car length lead. The Mark II has, nevertheless, the characteristics of a distance runner rather than a sprinter. While it's quick off the mark it's at its top end that it really comes alive. Even in fourth cog acceleration is forceful from about 3000 up and from 4000 up it takes a big second bite.

Fast cruising is enhanced by reduced wind noise with the top up. The second top bow is now attached to the fabric, eliminating the roar caused by wind buffeting in former models. It's not possible to talk in a whisper at that speed but at least you can hear yourself think. Fan noise which is obvious at higher revs in lower gears is drowned out by the wind and with the top down the only noises are a swish from the wind and a purr from the exhaust. The added snap fasteners, introduced on the 1600s to fix the top's side curtain openings to the hood framework, have been eliminated on the Mark II. Apparently they served no purpose other than to be forgotten when lowering the top with the result that the fabric ripped.

TRADITIONAL CRISP HANDLING

If there's one thing that sets the MG apart from any other car on the road it's the steering. Never mind, you Sprite drivers! It has no play and perfect timing, being just as accurate but less finicky than the Sprite's. The feel is perfect, most will agree, although some may find the return action on the heavy side. Even though road reaction is transmitted back to the wheel it's done in a way to assure the driver, not wrench control from him. The handling of the car, even with its solid rear axle, is a pure delight. It points true on the straights, is easy to place in corners and, to re-use the cliche about MGs, it's forgiving. Slight motions are all that's needed to change directions, yet full feel of the road is there right to the limit.

Essentially understeering, its responsiveness is excellent and the rear end behaves itself in a predictable way, coming out slowly and progressively. There is some lean but not a significant amount. In very tight corners, such as rounding a pylon in a fast gymkhana, the inside rear wheel will lift, but that's an indication you weren't taking the fastest way around in the first place. With the Mark II's added power, it becomes even easier to turn around within the car's 94-inch wheelbase when you want to. The Dunlop Gold Seal tubeless tires ran quietly, gave a good feel and adequate bite but we found higher than recommended pressures an improvement. The stiff suspension transmitted all the bumps to the seat of the pants but reduced their intensity. The result is the feeling of knowing at all times what the car is doing in relation to the road.

There are still no outside door handles on the MGA, entry being gained by tugging a cable in the door pocket. Entry and exit are typical sports car fashion; either you adapt to it or it's inconvenient. The seats themselves are leather faced over sponge rubber and have seat cushions that are quite soft and comfortable for long periods. There is only a hint of real bucket shape, but the center arm-rest helps keep the driver in his place. Seat belts are better yet and we understand that later Mark IIs will feature built-in seat belt mountings as does the new MG Midget. Leg room is good and there is room to squirm. The seat position itself is low and the placement of the rear view mirror on the cowl adds to obstruction of the right front fender, which is why some gymkhana drivers remove them in events. One enterprising owner added wooden blocks to the bottom of the seat to raise himself a bit (without jamming his thighs against the steering wheel) and relocated the mirror at

(Continued on page 64)

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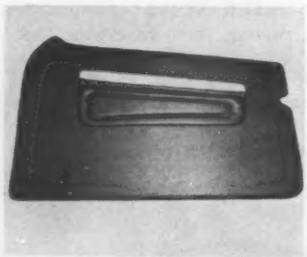

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(Continued from page 63)

the top edge of the windshield, hanging downward below the top clip.

REFINING A FINE INTERIOR

The controls and gauges rate acclaim for their positiveness. Although they are scattered in an "artistic" way all over the dash they are easy to read and reach. The near vertical 16½-inch steering wheel is placed slightly high, but this allows leg clearance. A smaller-diameter wood-rimmed wheel would be a nice replacement and would retain the adjustable-reach feature of the standard wheel. The flat-X design of the spokes, incidentally, may be traced directly to the MG EX 179 record breaker.

The pendant brake, clutch and accelerator pedals are well placed for competition use. Although we know one large-footed driver who put an extension on the gas pedal to facilitate heel and toeing, most people wouldn't need it. To eliminate the clanking when the pedals are released,

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wrap tape on the small tubular stop. The dip switch location was lowered on the toe board with the 1600 and is kept there on the Mark II; it's more convenient than the 1500's. Missing on the left-hand-drive models is a left-foot rest that is found on RHD 1600s and Mark IIs; it's still in the car, but the passenger doesn't need it. Speaking of pedals, one accessory we'd urge all new owners to make or buy immediately is a scuff plate for alongside the gas pedal. The bare carpeting will wear out very quickly. As a general recommendation we'd urge getting rubber carpeting to protect the floor mats too and advise against resting the left foot on the convenient diagonal side member. That's a potential wear point also.

The fly-off hand brake, even in left-hand-drive cars, stays on the right side of the transmission tunnel. Its location is excellent; there's no need for it on the driver's side. Placing it there frees the between-the-seats area for an occasional third passenger and allows easy exit, unlike cars which have the brake left of the driver's seat. Its action is such that release is a quick, positive movement and accidental release is very unlikely. Incidentally, the amount of travel needed to set the hand brake gives a good indication of the rear lining adjustment. If more than a couple of inches is needed, adjust your rear brakes and the hand brake is set automatically.

DASH AND DIAL DETAILS

As can be seen from the instrument panel diagram all the necessary gauges come installed. We've seen MGAs in which owners moved the water temp/oil pressure gauge to the slot occupied by the gas gauge. It's a good Saturday project. Others we've seen have removed the radio speaker grille, replaced it with a plate of aluminum and installed an ammeter to supplement the ignition warning light. The direction signal switch is a pneumatic unit and its flashing cycle may be adjusted by turning a screw on the back. A pre-wired fog light circuit is built in. To install either a fog or driving light all that need be done is run a wire from the lamp to the red and yellow lead located behind the grille on the right side, and plug in. The body of the lamp acts as the ground. If both fog and driving lights are used, the fog light may be wired as described and the driving light hooked up to the high beams with an over-ride switch installed either on the dash or under it.

All the instruments are legibly marked and there is a resettable trip odometer that's useful for rally work. If you are very sharp-eyed it's possible to read the tenths of miles column down to hundredths and it's possible to advance the odometer to corrected mileage figures. Do not, however, attempt to zero or advance the odometer when the car is moving; the instrument will break. The map light on the far right of the dash is useful, but experienced rallyists will usually install a cigarette lighter and plug into that or wire their clipboard light into the dash fixture. Incidentally, there is still no ash tray in the MG although one is available as an accessory through dealers (Part number AHH 5539, $8.10) or accessory shops. A bean-bag type works well but may tend to be self-emptying on hard corners or at speed when the ashes fly out, so we'd urge one that's attached and has a lid, or else slip empty soup cans into the door pockets.

The heater/defroster is up to its job in all but sub-zero temperatures when most of the warmth escapes through the top. Wind sealing was very good but our test car leaked rain in the annoying places: from the top of the windshield, under the cowl and the edge of the doors. This was in contrast to a 1500 owned by a staff member which scarcely leaked at all. Ventilation with the top up is adequate though the driver's legs get warm. Most of the fresh air through the heater outlet dumps onto the transmission tunnel. A last comment about the top and side curtains: in new cars they are very stiff; use graphite or dripless oil on the top joints and a silicone spray on the window tracks; watch out for scratching the plastic rear windows and side curtains by keeping them free from grit.

The two door pockets are a useful size but there is no lockable glove compartment. Perhaps MG should snitch the Sunbeam Alpine's arm rest/glove box. There are no locks on the doors and none on the trunk either, although accessory shops sell one for the latter. We'd advise new

car buyers to remove the spare key from its hiding spot under the hood (it's screwed to the heater) and also would recommend installing a trunk lock and a battery cut-off switch. The MGA, like almost all British convertibles, is disturbingly easy to start without the key. One owner uses his fog light switch in the ignition circuit so that the key must be turned and the fog light switch pulled out to start the engine.

INSPIRES HOME MAINTENANCE

Owning an MGA of any vintage is not only enjoyable, it's an education. It's the kind of car that encourages (but doesn't require) backyard tinkering. Unfortunately the Mark II's tool roll, stored in the trunk, is equipped with many fewer tools than former models but if you have American wrenches they will fit most of the nuts and bolts on the car. If you are so inclined, plug changes, valve adjustments, carburetor tuning, timing, changing the points, etc., are easily accomplished. About the only truly difficult routine task for the backyard Alf Francis is changing the oil filter, which is most easily accomplished with the aid of a second person. We know of one "clique" of MG owners who used to meet regularly and aid each other in working on their cars. It's the kind of car that inspires that sort of camaraderie.

A funnel and length of small-diameter rubber tubing facilitates filling the transmission. The front shock absorbers can be topped up in the same way, while an accomplice moves the car up and down (the rear shocks must be removed for topping up) so shock absorber fluid can be added. The "grease gun" in the tool kit of former cars would be good to get. It is never used by most owners or it is tried once and discarded because it "doesn't work." The reason for its nonoperation is simply that it's not a grease gun but an oil gun and is perfect for lubricating the steering rack and pinion with hypoid oil. The location of the two six-volt batteries out-of-sight-out-of-mind behind the seats renders them subject to neglect, dirt and water. Lucas sells a handy battery filler that prevents overfilling them when topping up. One of the few modern cars with a crank, it is useful for dead-battery starts or for turning the engine when adjusting the valves or installing points.

We've found the lifespan of the standard fan belt to be unpredictable. On our test car it lasted 2100 miles; on the 1600 we referred to it lasted a little longer and it lasted about 12,000 miles on the 1500 we mentioned. American companies make a replacement; if you can't find MGA listed, check under Metropolitan, Austin A-55, certain Ford six-cylinder trucks and, surprise, Volkswagen through at least 1960. There are, no doubt, others that will fit.

ART OF STORING LUGGAGE

With the basic body shell now in its seventh year of production, one can only guess at the number of luggage racks that have been sold to supplement the negligible trunk space. Most of the wide shallow capacity is occupied by the spare tire. MG offers its own rack (part number AHH 5495, $58.21) and there are several others available from accessory shops. If you travel with a passenger or much more than a toothbrush and a change of clothes, you'll find one useful. One owner we know installed a rack, decided which pieces of luggage he would carry on it and had a canvas cover made to fit. This presents a neat appearance and keeps the luggage dry, probably drier than the test car's trunk which leaked. Lift-the-dot fasteners hold the cover to the trunk lid. The screw-type jack of earlier MGAs has been replaced with a ratchet type and the wheel lug wrench has been improved. The bumpers of the car are more decorative than functional and a grille guard may be considered a wise investment if you park on the street much. Parking too close to other cars may result in numerous little dents in the aluminum doors too if you aren't careful. The trunk lid and hood, incidentally, are also aluminum.

As will be noted in the specifications list, options enable the Mark II owner to tailor his car to his own requirements. One of the new packages this year results from the death of the MGA Twin Cam, a promising machine that just never got off the ground. Production has ceased on this model and only 2111 were made between 1958 and 1960. However for $250 over the basic price it's possible to get four-wheel disc brakes, knock-off disc wheels and Roadspeed 5.90 x 15 tires, all of which were standard on the Twin Cam. We were surprised to find when checking our research on MGAs that the performance of the Mark II is comparable to the Twin Cam in street form. Zero to 60 time for the off-the-dealer's-floor Twin Cam was about 13 seconds and its time for the quarter mile was around 18½ seconds. Considering that the Twin Cam carried a substantially higher price than the Mark

(*Continued on page 66*)

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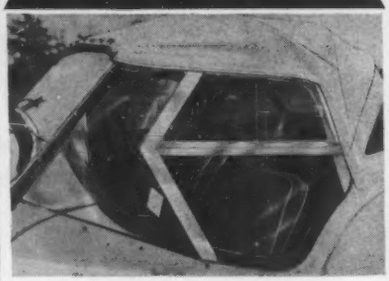

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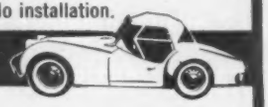

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(Continued from page 65)

II and that its power was well over 100 bhp, the comparison puts the Mark II in a very favorable light indeed.

As this Road Research Report went to press, full competition equipment and specifications for the Mark II had not been compiled by BMC. The items listed were produced for the 1600; all are suitable on the Mark II. Pending the issuance of a Mark II tuning manual, the one for the 1600 should give valuable information including part numbers for all the bits and pieces that make up the various kits and recommended stages of tune.

RENEWING AND REVOLUTIONIZING

For those who find, after thousands of miles of good and faithful service, that the original engine is beginning to get tired. BMC has a sound plan for refurbishing the power. It sells what is called a "half engine," consisting of the block, pistons, rods, crank, camshaft, front mounting plate, etc., fully assembled. You provide from your original engine the head assembly, front timing chain cover, oil pan and some other parts. The cost of the unit is $280 for a 1600 engine. Two part numbers are listed, 48G158 or 48G186. A similar half engine will eventually be offered for the Mark II. There is no exchange on your old engine; you buy the replacement half engine outright. The availability of such components should enable owners of 1500 cc cars to boost their power in the simplest way.

Regardless of the adequate stock performance and the enticing possibilities offered through tuning procedures, some owners may eventually want to swap engines. The weight of the stock unit is 370 pounds, a figure heavier than Buick's more powerful aluminum V8. One reader has sent us pictures of his MGA with a Falcon six (see C/D, Sept. 1961) which he says gives added power and reduced weight too. Another popular swap is to the Chevy V8. Like they say in the old song, "There ain't no substitute for cubic inches."

Nevertheless the MGA, particularly in its latest Mark II version, represents full value received for money expended. Tracing its heritage directly to special Le Mans cars and Bonneville record breakers, it is the latest and most eloquent expression of the company's Safety Fast slogan. It's a solid car that gives satisfying performance through a skillful blending of many stock components, reflecting the shrewdness MG engineers have exhibited right from the start. While it may be something less than *avant garde* with a separate body and chassis and a solid rear axle, these features don't affect the car's performance adversely. In fact, they have benefits in the form of truly predictable handling and low cost of maintenance and replacement. If you overdo it and crinkle a fender there's no need to buy half a car — just bolt on the new one.

The Mark II should extend the reputation MGs have won for reliability, performance, finish and fun in all corners of the world. Like the former types they are perfectly adaptable to use by boulevard sportscarteers or grimy-finger-nailed hard-driving enthusiasts. Even the chic coupe possesses the "I-can-take-it" quality the make is known for. For current owners of MGs we have a prescription: the Mark II is just what the doctor ordered. —*C/D*

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PHIL EXCELS AT SPA

Continued from page 59

Hill, Gendebien, Ginther and von Trips were in the lead and going away. It was later evident that there had been an inter-team agreement that, all things being even, since von Trips had won at Zandvoort, Hill should take command and Ginther, being the "new boy", should bring up the rear. Gendebien was a free agent. The Belgian, being on his home ground, was trying very hard, and at times seemingly a bit dangerously, to assume the lead—which he was able to do on the second lap to the great delight of some 75,000 Belgians in attendance. The next lap saw Hill come by just ahead of Gendebien and von Trips —the latter also getting ahead of the yellow Ferrari for the two subsequent laps. On the sixth and seventh laps the Belgian again edged into the lead as the leaders went by the pits. The following laps, however, saw him drop back again into third until lap twelve, when Ginther passed him as well.

While this was going on a real battle was shaping up between Surtees and Graham Hill for fifth position. This developed into a real dice. Their positions were reversed, as they went by the start-finish line, no less than eight times before the 19th lap, when Hill stopped at his pits to check on a faulty exhaust pipe only to find that his oil tank was broken as well, retiring him.

Not far behind Surtees and Hill another contest proceeded between Brabham and Gurney, who were swapping seventh position back and forth, until Brabham's Mk. II Climax blew up in a large cloud of smoke and little pieces directly in front of the pits and, among others, John Cooper. Brabham's only consolation was that it was a short walk back, and at least he didn't have to explain what had happened.

Gurney, once again displaying his ability and willingness to tiger, now set his sights on Surtees. He began closing the gap slowly but was unable to catch the Cooper before the end, eventually finishing 4.2 seconds behind.

Besides Surtees and Gurney there were only two other cars in the final stages of the race that were on the same lap as the leaders, those of Bonnier and Moss—neither of whom appeared very happy with the performance of their cars.

On the 25th lap, five from the end, Ginther proved he had learned this driver's circuit by turning a lap at 3:59.8, fastest of the race. In the process of this Ginther suddenly found himself in the midst of the leaders, Hill and von Trips, who were easing up now in view of their lead. Team manager Tavoni, understandably not wanting to take any risks, signaled Ginther to drop back, which he did promptly. Thus the Ferrari team finished as planned, sounding as healthy as they had at the start, which is to say—plenty! —*PC*

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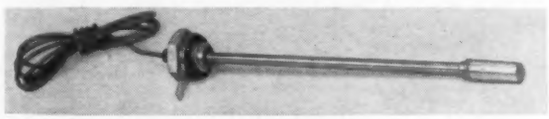

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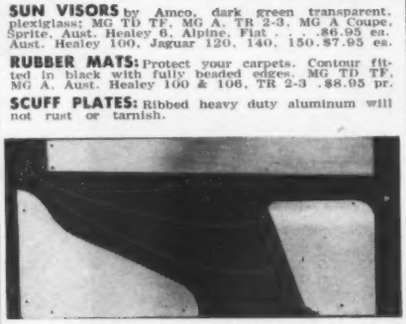

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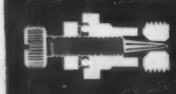

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MICKEY THOMPSON BATS .777!

Continued from page 25

first official run. Mickey nabbed the kilo but missed the mile by a couple of mph. Disappointed but not discouraged he left it for a later try.

The supercharged two-cylinder has as its main claim to fame the fact that it runs at all. But run it does, smoothing out above 3000 revs, ultimately developing approximately 300 bhp at 7000 rpm. This is a whopping lot of horses from 90 inches but the nitro blend fuel helps as does the 20 pounds boost from the GMC 2-71 blower. This engine, too, is mounted in a modified Dragmaster chassis, 96-inch wheelbase, front and rear tread, 50 and 38 inches.

Then came the Class E car again, ready now. Thompson knocked off those records by a comfortable margin. Here occurred one of the two minor mishaps of the day. While changing plugs and servicing the car between runs, someone placed the cockpit canopy atop Mickey's station wagon. Someone else drove the wagon away and the canopy crashed to the paving. Had the plexiglas screen broken the car would have been finished. But it didn't, and a little bending put the aluminum back in shape.

As the Attempt was wheeled back to the pits for its engine swap to Class D, Mickey climbed aboard the Assault, cracking Class C records without difficulty. This is the car that gave him his fastest ride; he estimated his terminal speed at the end of the mile at 240 mph — this in order to average 138.926.

In spite of the Assault's somewhat unstreamlined lines, it is an effective piece of equipment. It looks as brutal as it is. Whereas the rest of the race cars carried La Salle three-speed transmisions, the Assault has a four-speed B-W Hydro; all Mickey had to do was stand on the pedal and steer. The engine, a 1957 Pontiac V8 block displacing 303 cubic inches (3 15/16 x 3 inches) got a push from a chain-driven GMC 6-71 blower, bringing power up to 690 at 7200 rpm. The Dragmaster chassis is the same basic design as the rest of the cars but it is longer — 104-inch wheelbase.

Moving back to the two-cylinder, it was decided to increase the nitro percentage in the fuel. Although the actual mixture was never revealed, it is fairly safe to estimate that Mickey went from 25 to just over 40 percent nitromethane. Now it became a case of go or blow, and he went. His mile figure was just .83 mph over the necessary one percent margin above the old record.

Finally it was time to break out the stocker. Displacing 389 cubic inches, it is truly stock with nothing that is not cataloged by Pontiac. It does carry every optional performance and chassis part that can aid its acceleration, including the Tri-Power manifold, but anyone could duplicate the car by ordering the pieces. Mickey moved up to the line, punched the throttle in first. The tires refused to bite, there was terrific rear wheel hop on the bumpy runway — and the transmission tailshaft twisted. Nothing to do but install a new transmission, four-speed with floor shift, of course. This done, the runs were made, again new records set by a wide margin.

About noon the wind was bad. Mickey had one more car to run — the Attempt with its Class D engine. Externally it is nearly impossible to tell the Class D Tempest from the smaller E engine. The only noticeable difference — and this to a very practiced eye — is the 4-71 blower. Inside, bore is a stock 4 1/16. Coupled with a 1/4-destroke to 3 1/2 inches, displacement becomes 180 inches. Horsepower checks out about 460 at 7000.

He waited, hoping for the wind to die. But it did not. Meanwhile the temperature had been climbing steadily, hovering near and slightly above the 100 degree point. Shortly after one p.m. Mickey made a kilo run, missing his speed, unable to hold the car straight. He was pushed back to the starting line for a second try. Then he announced that he was all through. "I had a feeling about that run, and when I get a feeling, that's it," he said.

Without the full cooperation of the U.S. Air Force the runs would have been completely out of the question. Also pitching in to ease the burden were Champion Spark Plugs, Valvoline Motor Oils and Goodyear Tires. —*WT*

MICKEY THOMPSON STANDING KILOMETER AND MILE RECORD ATTEMPT—July 9, 1961

Existing records—all standing start

International Class C		Year Set	3000-5000cc displacement	Old	New
1 K.	Ed Cortopassi	1958	Glass Slipper (U.S.)	116.43 mph	123.902
1 M.	B. Rosemeyer	1937	Auto Union (Germany)	125.3	138.926

Thompson car: **Assault,** streamlined body, supercharged Pontiac V8 displacing 303 cubic inches.

* * * * *

International Class D		Year Set	2000-3000cc	Old	New
1 K.	R. Caracciola	1939	Mercedes-Benz (Germany)	110.2	Missed
1 M.	R. Caracciola	1939	Mercedes-Benz (Germany)	127.1	No Runs

Thompson car: **Attempt,** streamlined body, supercharged Pontiac Tempest destroked to 180 cubic inches.

* * * * *

International Class E		Year Set	1500-2000cc	Old	New
1 K.	R. Mays	1934	E.R.A. (British)	89.73	96.368
1 M.	Liechtenstein	1930	Bugatti (France)	94.01	114.349

Thompson car: **Attempt,** streamlined body, supercharged Pontiac Tempest destroked and sleeved to 120 cubic inches.

* * * * *

International Class F		Year Set	1100-1500cc	Old	New
1 K.	Furmanik	1937	Maserati (Italy)	89.7	91.36
1 M.	Furmanik	1937	Maserati (Italy)	104.9	106.78

Thompson car: Special open body, supercharged Pontiac Tempest cut in half to form two-cylinder engine that has been destroked to displace 90 cubic inches.

* * * * *

American National Stock Car Class B.			305-488 cubic inches	Old	New
(No International Class in this category)					
1 K.	Chuck Daigh	1956	'57 Ford	73.15	81.497
1 M.	Chuck Daigh	1956	'57 Ford	84.02	95.571

Thompson car: 1961 Pontiac Catalina two-door, engine displaces 389 cubic inches.
Note that breaking International Classes in the U. S. also captures equivalent American National record.

TECHNOTES

MAKING MORE WANKELS

(In August, 1960, we ran a story on "How To Build A Wankel Engine!" which featured the power unit built by William T. Thomas, Sr. and his son. Here's the latest effort, a more advanced and refined power plant than the delta-rotored one described then, being based on principles outlined in "Techniques of Tomorrow's Power" which appeared in the May, 1961 C/D.)

Here's our latest rotary engine. It has two power pulses per shaft revolution and only two moving parts.

I designed, built and ran it successfully in a span of 35 days. Its displacement is 1.25 cubic inches and it turns two 14-inch diameter, 8-inch pitch propellers at 4000 rpm at this writing. Its balance is excellent.

It has a pentagonal rotor, 4 to 5 gearing and its cycle is similar to two Wankels 180 degrees out of phase. The sealing at the rotor sides is by lapped clearance, the same as on our other Wankel.

William F. Thomas, Jr.
Daytona Beach, Florida

FERRARI ELECTRICS

The magnificent cutaway of the Ferrari F.1/61-120° by Gordon Bruce in the July issue raised two questions. Why does this Ferrari have a battery if it has magneto-type ignition? How is this and similar Grand Prix cars started?

Ray Widmayer
Silver Spring, Maryland

As mentioned in the story, the G.P. Ferrari has distributor ignition, not magneto. This was adopted because a battery was made necessary by regulations for the current Formula 1 which require a self-starting system and effectively prohibit push-starting. These cars used to be started by pushing or by external electric motors as are still used on Indy cars.

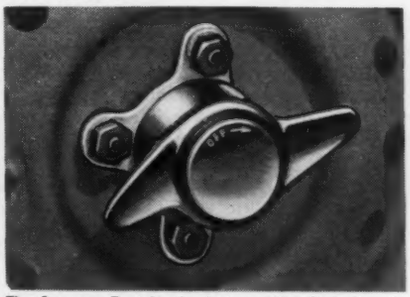
To combat loss of performance caused by lessening of the battery's state of charge toward the end of a race, Ferrari has added three battery cells to produce an 18-volt supply and fitted a tiny Westinghouse alternator driven from the right hand exhaust camshaft. Even these measures didn't supply enough current to allow Phil Hill to restart on the battery after his spinout in the late stages of the French Grand Prix.

TEST YOUR SPORTS CAR R.A.*

A Quickie-Quiz By Marion Weber
***Recognition Ability**

Hi, there! Doubtless you have all been passing the Quaker State sports car IQ tests that have been a regular feature in the ads running in this and other auto publications. If not, please turn in your driving gloves and stand by to have your badge bars stripped. If you think you have advanced beyond the level of these questionnaires, see what you can do with the following:

What is the bore and stroke of the 2.5 litre Jaguar SS-100 in millimeters?
Which MG was powered by a Wolseley engine?
Name a British 3-Wheeler besides the Mog.
What is the name of the new f.w.d. Grand Prix car?
What is the object directly below and will it give you more sex appeal?



The Answers: To take the last question first, the object in the photo is a NOKOFF—pronounced "knock-off"—and yes, it will give you sex appeal. How? By making your car's drab little wheels come to life with the flashing sparkle that only results from a knock-off hubcap. These beautifully made chrome plated spinners so closely resemble the real thing that they make your car look like a million bucks. This gives you self-confidence, you take on new life, become more attractive to the opposite sex . . . for only $24.95 complete. No holes to drill. Incidentally, you have no idea how great these look on Corvairs. Tremendous! Other cars are comparable: Sprite, TR, Alfa, Alpine, VW, Ghia, Corvette, MGA, Volvo, Mercedes 190 & 300SL, Ford, Thunderbird, Falcon, Buick Special, Olds F-85 . . . to fit any of these . . . $24.95 a set, post paid! (specify make, year)
The bore & stroke of the SS-100, 2.5: 73mm x 106mm
The Magna, F—1931, six cylinder, MG used a Wolesley engine. Among the triangular types were the Stanhope (with belt drive) the T.B., the Castle-Three, Coventry-Premier and the Wooler-Mule. You can probably think of many others. Meanwhile think about replacing your stock shift knob with one of these:

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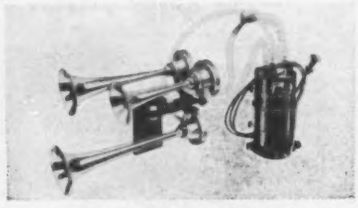

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JUNKET REPORT: VW 1500

Continued from page 27

the crankshaft also removed one of the few tender spots in this type of engine: dependance for temperature control on a single rubber belt. C/D's first guesstimate on the bore and stroke of the new 1500 engine (May 1961) proved to be right on the button at 3.3 inches by 2.7 inches!

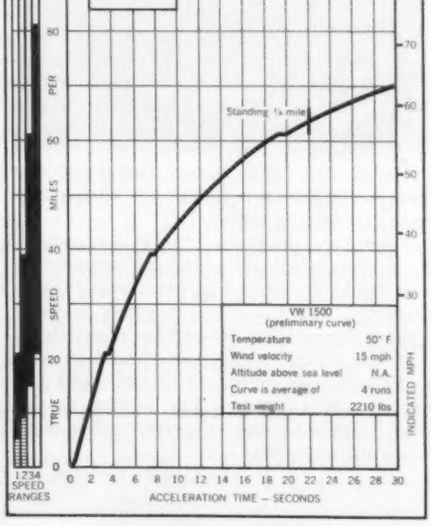
Front suspension has been made softer to cope with the 1500's improved performance. Springing is still by torsion bars and trailing arms; the new front end has the lower arms controlled by bars that run the width of the front cross bar, crossing each other in the process. The setup is vaguely like that used on early Kurtis Indianapolis roadsters. The top arms are attached to a single stabilizer bar intended to control roll. This front end, combined with a new Continental tire with a tread pattern going quite high up the sidewall, makes it possible to do things with the 1500 that would be impossible with the older car. Chassis dimensions on the new car are unchanged from those of the classic Volkswagen. Reason for this is the tremendous amount of money invested throughout the world in specialized service equipment. A fraction of an inch difference could mean the replacement of hundreds of jigs and fixtures.

The new interior is pleasant without being flashy. A curved windshield and hooded instruments give it a modern look, while neat touches are provided by recessed door handles that are actually inset rings. To the left of the dished steering wheel there is a line of four buttons separated by a split plastic wheel. These push buttons control washer, wipers, and lights. The top of the wheel controls the electric wiper speed, and the bottom half the intensity of the dash lights. In the middle of the dash are the heater controls and an ash tray, while to the right is the glove compartment topped by a grab handle inset into the top of the padded dashboard.

Someone must have complained about the gearshift lever in the classic VW for the 1500 is equipped with a really hefty rod topped by a handful of beautiful white German plastic. Attachment points for seat belts — for both front and rear seats — are provided, neatly capped with plastic stoppers on the beltless car we were shown. The rear seat — with a fold-down arm rest — is intended for three although that number of six-footers selected from among the viewing press group were an interference fit.

Leaving the static display we were taken to the test track and allowed to drive the new car. Noted first was the improved torque in the lower gears, and second the softness of the new front suspension. The ride, over the wonderful variety of surfaces provided by the testing area, was very good with cobblestoned surfaces and potholes being traversed at high speed without feeling that something was going to break or that you were mistreating a car you didn't own. Handling proved a real eye-opener with the new tires and suspension working together to make the car a neutral-steerer almost up to the point of breakaway. It felt like the sort of vehicle that would really have to be provoked before it reared up and bit back. All five test cars, driven by 10 auto writers, came through the afternoon with flying colors. None of the 1500s, to the best of our knowledge, even came near being inverted.

During the afternoon I had an opportunity to talk with Dr. Peters, one of the development engineers on the project. His comments on chronology of the new car were interesting. From February to March of 1959 work was being done on a 1300 model which was considered inadequate for the intended market and scrapped in favor of the 1500. First drawings for the new car were made in August of 1959 while a regular Volkswagen chassis was given to the VW styling people to work out the basic external lines. (Styling seems to be tolerated at Wolfsburg rather than dictating to the engineering side as is the common


Top Speed: 81 mph (estimated)
Standing ¼ mile
VW 1500 (preliminary curve)
Temperature 50° F
Wind velocity 15 mph
Altitude above sea level N.A.
Curve is average of 4 runs
Test weight 2210 lbs
TRUE SPEED MILES PER HOUR
INDICATED MPH
1234 SPEED RANGES
ACCELERATION TIME – SECONDS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

practice in the United States.) The first handmade prototype emerged from the shops in November of 1959 and ran straight into some heating problems. As an insight on this I noticed four or five prime-painted test cars with various air intake locations. Some had the louvers just below the rear side windows, while others had variations on the present location — under the rear window. With this problem solved the second car was lapping the banked test track by January of 1960. With the coming of spring it was joined by ten more 1500s, five of which had been built from production parts. Extending this into the future: the first production cars will emerge in February of 1962 with cars for sale that spring in Germany for $1600. Plans for sale in the U.S.? None in the immediate future, especially with a planned production of only 300 to 400 a day. One thing everyone at Volkswagen is dead certain about — the 1500 is not intended as a replacement for the VW. Its purpose is to increase Volkswagen market penetration, and, at the same time, skim some of the cream from the rising tide of prosperity in Europe.—*WW*

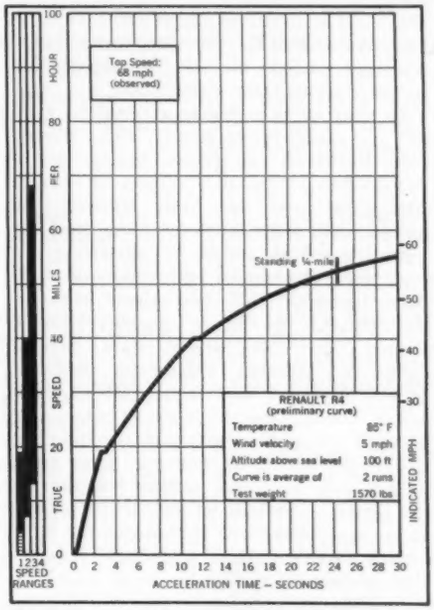
JUNKET REPORT: RENAULT R4

Continued from page 29

at 6000 miles. "Aha," I thought, when I first heard of this, "that's fine but they still have water cooling to worry about. How much better an air-cooled engine would have been for such a car!" Renault outmaneuvered this proviso by fitting the modern industry's first sealed cooling system. A 50-50 mix of glycol and water, poured in at the factory, serves for life. An expansion tank in the right front fender captures coolant that expands out of the system, and returns it to the main circuit as required.

At this point the journalists assembled were just about ready for some coolant as well, so we all retired to the bar of Boris after a brief run in the R4L. A fine dinner was stowed away with dessert in the form of some very good Flamenco dancing with even better guitar accompaniment. Next morning we were out early for a day's drive over a challenging 140-mile route that included a special cross-country course over atrocious terrain. Griff Borgeson and I chose the standard R4 model for the day because we preferred its spartan air and especially its clean three-spoke steering wheel.

Starting quickly and idling quietly, the little engine at once displayed the smooth silence bred of production of over three million units of the same basic type. With peak torque at 2500 rpm and peak power at 4500 it has a remarkably wide power range that makes three speeds adequate for the job and provides acceptable over-the-road performance. Shifting is done with a big push-pull knob, just as in the 2CV


Top Speed: 68 mph (observed)
Standing ¼-mile
RENAULT R4 (preliminary curve)
Temperature 85° F
Wind velocity 5 mph
Altitude above sea level 100 ft
Curve is average of 2 runs
Test weight 1570 lbs
TRUE SPEED MILES PER HOUR
INDICATED MPH
1234 SPEED RANGES
ACCELERATION TIME – SECONDS

Citroën but with a more compact pattern. Even on full lock with lots of power applied there's no kickback through the steering wheel; the only disturbances occur when the drive wheels slip over very loose surfaces.

Handling is unrelenting understeer, even to a protest from the front tires when cornering that can be eliminated by fitting larger-section casings (optional, with a front belly pan, in a special rough-road kit). Traction seemed excellent over all surfaces we encountered and ride was, to put it mildly, phenomenal. Renault has given the R4 the wonderful ride of the 2CV with absolutely none of the latter's bounding and leaning tendencies. Griff and I gaped in wonderment at each other as our R4 picked its way with ease over rocky outcroppings, carrying us in regal comfort above.

Lunches and dinners were as usual the pivotal events in our last day in the south of France with Renault, and as we whirred back to Paris in the Heron I considered the R4. Without doubt it's a clever design created to fill a market segment in which there's no competition today: a utility vehicle simpler and cheaper than existing Jeeps and the like, yet with more performance and refinement than the spartan 2CV Citroën. Griff and I agreed that the R4 should not be sold in the U.S. as just another small car, but should be aimed at the growing weekender and sportsman's market and imported in the simplest, cheapest version. Renault has not yet announced its U.S. plans or a projected price, but it seems likely the basic R4 could be sold here for $1100 or less. Assuming that the R4 will be manufactured with strength and care in accord with its purpose, at that price it would be an invaluable companion to the American outdoor man.

—KEL

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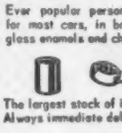

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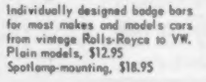

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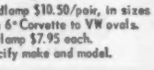

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IT'S NOT THE CAR, IT'S KOLB

Continued from page 37

that Charlie could no longer continue driving his Cooper. By the time it developed a serious gearbox ailment, Charlie decided it was time to make the change.

In spite of this change of mounts, Kolb did not compete in enough races during 1959 to amass the points needed for a championship. In this respect it was a frustrating year for him, although he gained some solace from receiving the Most Versatile Driver award. In reviewing his cars over the previous years, many of them driven solely in 1959, one cannot help but be amazed by their number — Lotus, Cooper, Elva, MG, DKW, Volvo, Simca, Triumph, Morgan, Fairthorpe, Porsche, Ferrari, Maserati, and Jaguar. Of all these makes, the only one he failed to pilot to an overall or class win was Jaguar. Included in that simple statement, however, is the more serious note that this failure was due to the Jaguar's breaking an axle while he was racing it in Canada. It represented the most serious racing mishap in which remarkably accident-free Charlie Kolb has ever been involved.

1959 could well be titled the Year of Great Expectation for Charlie. If this is true 1960 could just as well be called Year of Fulfillment, for in it he won the Formula Junior Championship by winning 35 of the 41 events in which he drove. He planned to open the year by driving the Southern Cushion Elva. Meanwhile Elva Distributors of Kensington, Maryland had taken over the distributorship in the United States, and wanted to get some publicity for the relatively new Formula Junior. Charlie says of his experience to this point, "I had never driven an open-wheeled car before, but Elva flew a car over to be run at Marlboro in the first SCCA event of the year. At the time, the DKW-engined car was supposed to be the fastest. The factory had just run a DKW Junior in a race in England, but they didn't have one available for us, so instead they sent a BMC-engined car which had done fifth in the same race. They told us it wasn't a winning car, but it was good-handling and $1000 cheaper. I drove it at Marlboro and won, and I was very pleased with its performance."

For the Sebring Junior race, the factory wanted to ship over a new Elva with the faster DKW engine. "I wanted to keep the BMC," Charlie said, "but the boss said no. So we took the new car to Sebring, along with an Elva Courier which we had to run in the big race because of that silly rule. [The FIA windshield ruling which would not permit the Elva Mk. V to compete in production class.] In practice I set the fastest lap, but we had mechanical trouble and the car couldn't start." At this point there was a hint of sadness in Charlie's expression, but he said nothing about what might have been with the BMC engine, perhaps because he didn't want to be considered a second-guesser.

Going back north, Charlie stopped off at Pensacola and drove the Courier to an F production win, then gathered together the herd of ailing, (the Southern Cushion Elva Mk. V) sick, (the Formula Junior) and convalescent, (the Courier) for the long drive up the trail to Kensington. There he expressed a desire to have the Sebring car repaired and continue to use it. "I was pleased with its performance and wanted to have it ready for the next National at Marlboro. But Elva Distributors wanted me to take a BMC-engined car again because they had about eight of them on hand. Everyone wanted the DKW engine. They felt if I took the BMC car and made a good showing it would help sales. So I took the car, won 35 out of 41 races, and they sold all the BMCs."

Well into 1960, after Cumberland, Charlie was leading not only in the Formula Junior point standing but also F Production and G Modified, all on Elva products. "Then Elva Distributors was forced to give up their distributorship, and Charlie Kreisler of New York took it over. He also had a two-liter Cooper Monaco and a three-liter Ferrari. For a while I was driving all five cars in every race, but it was too much. It was too much for me, and it was too much for the cars. We never had a chance to keep them in good shape — just loaded them up and took them to the next race. We raced 48 weeks out of the year. After Meadowdale, Southern Cushion decided to take their car back to Hickory, North Carolina for repairs, and Kreisler sold the Cooper and Ferrari." After a good deal of thought, Charlie finally decided to concentrate on Formula Juniors to win the championship, even though this canceled his chances to add F Production and G Modified crowns as well.

With all Kolb's driving for Elva during 1960, one of the peculiarities of the season is that he helped Cooper win the Pan American championship. Cooper already had one leg up toward the championship after their win in the first of the four meets, at Riverside, but this was completely unknown to Charlie, who entered the Savannah event with his Elva still in El Paso. "I thought the championship was for drivers, not manufacturers, so I borrowed a Cooper from Dr. Waring of Savannah. This was the first time I had ever driven a rear-engined F.Jr. I practiced four laps and set the lap record — beat a Porsche Spyder time by four seconds — and went on to win the race. Needless to say, I received a reprimand from Elva. In November I ran the new rear-engined Elva Junior at Daytona and won my second invitation to Nassau. At Nassau I had the fastest practice time and got the pole position, but we didn't finish due to overheating, and a Cooper won. This gave them three wins out of four, and I drove one of them, so I guess I really helped give them the title."

But surely one of the things Charlie enjoyed most during 1960 was setting the lap record at the Louisville Nationals, beating Holbert and Penske Porsche times and Constantine's Lister-Corvette as well. He was driving his usual Elva Formula Junior, and that, friends, takes plenty of driving. Or, to rephrase the old maxim, there is a substitute for inches, and torque, and power: *skill.*

After some of the history is recited, you still come down to the big question: just how is it possible for anyone to win 35 of

(Continued on page 74)

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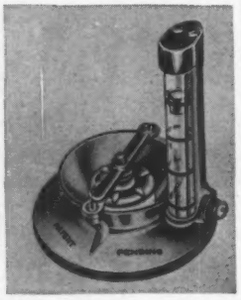

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(*Continued from page 72*)

41 races in one season? It just isn't done. Yet Kolb did it, and in a car that was not superior to many of his competitor's mounts.

A casual study of Charlie Kolb might find one influenced enough by his polished appearance and greying hair to place him in a tentative category of bank president or business executive. His slow Virginia speech might mark him a member of the Southern landed gentry. Looking closer, though, you see the steely determination in his eyes. That's the first big factor in his remarkable success: he wants to drive and he wants to win. Then of course there's the natural coordination and grace of the man; the latent athletic ability that was used in baseball during the '40s is simply being reinvested in another sport, and paying tremendous dividends in the process. He moves cleanly and precisely even in a basic movement such as walking; in motor racing he reflects this same precision to a magnificently high degree.

"My philosophy about racing has always been the same right from the start. I had a fellow with me — Jack Belgard — who had been a stock car driver and later became my mechanic. I asked Jack what I should do, and he told me to put my foot down and don't let up till I was out in front. I proceeded to try this little technique and it did work fairly well. What I try to do, then, is to watch the starter very closely in races preceeding mine, to spot any little peculiarity or characteristic that he might have in dropping the flag. I figure if you just get that little extra second jump on the others it helps you get off the line quicker, and if I get into the first turn first it's harder for them to catch me than it is for me to hold them. Then I try to build up, if possible, about fifteen seconds lead on the second-place car so that I can drop back on my time and just maintain any lead that I have. I don't try to overextend the car or my ability.

"Now, this is not always a true picture; you can't always get into the first turn in the lead. It depends on your grid position, and if that is the case, I don't try to win the race in the first lap. I try to get through the traffic as quickly as possible, and move into contention. I get behind the first- or second-place car and watch them to see what mistakes they make — how far they go into the turns and what technique they use — to see where I can take the advantage. Then when I find this position I wait for my chance to pass. I figure that's where I can gain on them each lap; and then I try to figure how many seconds I can pick up without damaging the car. It's pretty easy to go fast, but if you go fast for three laps and your car blows up, you can't finish the race. I always try to shift below the rev limit. If the limit is 7000, I try to stay around 6600, and I don't go to 7000 unless I absolutely have to towards the end of the race. Or, to contradict that just a little bit, I might do it on the second or third lap to gain an advantage. You never know what may happen in the latter stage of the race. Your car might develop some ailment and it would still be able to finish; if you haven't gained enough of a lead, you couldn't hold off the other cars. But you always want to go only as fast as you have to to win."

As far as his Formula Junior Championship for 1960 is concerned, Charlie is still modest enough to give a great deal of credit to his excellent cars. Although the BMC engine puts out only about 72 horsepower as the Elva was using it, the machine did have a remarkably fine suspension, including an independent rear, which some of the other Juniors did not have. Charlie says of this, "I consider that one fact alone to be most of my success in the F. Jr. automobile. I was able to negotiate most of the sharp turns and chicanes without too much difficulty with this automobile, because it seemed that wherever I aimed the car, it would go with me. I was off the course very few times; I think I spun out maybe three times the entire time I've been driving Junior automobiles. Now the Stanguellini, which I drove, is a good car, and it has a more powerful engine than my car. The BMC engine gives away over 100 cc to a Stanguellini, but they have a straight rear axle, and it is more difficult to negotiate a Formula Junior with a straight rear axle on a rough course or through hard turns than it would be for an independent rear." As far as Cooper is concerned, Charlie figures they are quite even with Elva. The engines are about the same, and both handle very well.

In comparing the BMC-engined Elva with the DKW, Kolb prefers the BMC. "I like the BMC engine better because I like an engine that is smooth all the way through your rev limit. I can get power from 2500 all the way up to 6500 with the BMC. The DKW doesn't hit its torque curve till about the top 1500 rpm, so if you drop the tach below say 4500, you're getting nothing. And if you go into a turn and let up on the gas, you don't have any power. It's like going into free-wheeling. You can't downshift a DKW-engined car to help you going into a turn. The BMC doesn't have as much power, it's not quite as fast an engine, but for all-around ability I think it is better."

In the event that any would-be detractors from the Kolb record of wins during 1960 should want to fire up some bursts such as, "He can't keep up a record like that. Competition will be stronger next year, and then we'll see what happens", Charlie is presently working on that. Since the wins mentioned earlier, he has added two more, both of major importance against terrific competition.

Most recent of these was his Gemini-piloting to a big win at Marlboro. Starting 8th on the grid, he passed Hayes, Constantine, Carter, Clark, and Lyles within three laps to win by 38 seconds over second-place Lyles.

But the biggest day was his magnificent driving at Sebring, which gave him a win by almost one lap over the top Junior drivers of the country. After only one lap he was out of sight of most of the competition, turning, in the process of further outdistancing them, a 3:31 lap for an average speed of 89.4 mph. And this was on the full 5.2-mile Sebring course on which Porsches were turning almost identical times.

Charlie is currently on a five-straight-win streak, with indications that he and Gemini will continue unbeaten for the rest of the year. "Now if I could just get a big car that would have a good chance for some overall wins, I'd really be happy," Charlie says.

—*WTK*

MISANTHROPIC MISSILE

Continued from page 48

peering along the longest hood in history — his nose and the car's were about twenty-four feet apart — disposed of his feet and legs between the dual drive shafts.

The chassis consisted of two enormously deep channel-section side members with their upper faces horizontal throughout but their lower planes tapering upward at each end. In addition to intermediate crossties at suitable intervals, the longerons were braced by a curved frontal member of massive proportions. This formed a mounting for twin trailing radius arms, three feet long, acting as front axle locators. Suspension was by almost flat leaf springs, working in trunnions and controlled by huge friction shocks. The front axle, a three-piece ensemble with upswept outer sections, passed through piercings in the chassis channels, the rear axle straddling the frame. Estimates of the suspension travel vary between one and three inches total deflection, so either way it can't have been exactly a rock-a-bye-baby ride. Coatalen's immediate subordinate on the Silver Bullet project was one Hugh Rose, and maybe it's relevant that designing trucks had previously been Mr. Rose's *metier;* post-Bullet, and possibly with inspiration therefrom, he successfully drafted municipal trolleycars at Sunbeam.

Considering the car was 31 feet long, you wouldn't think they'd have needed to ration Don on cockpit space, but they did. When he was in he was *in,* with just a whisker of clearance between his lap and what would have been the bottom arc of the steering wheel if crowding hadn't necessitated the substitution of a flat for an arc. Imprisoned as he was — the wheel had to come off before he could get in or out — he must have found comfort in the knowledge it was practically impossible for Silver Bullet to explode on impact: beneath the chassis and extending the full length and width of the car was an armor-plate bellypan, 3/16-inch thick, so in the event of a lost wheel or similar bereavement the car would toboggan to a standstill if it didn't overturn first. If it did overturn there were those "hooped ribs" noted by Sammy Davis — virtually uncrushable body formers sited immediately ahead of and behind the wheelhouse. Two turns of the tiller gave 15 degrees of front wheel sweep, a small but sufficient movement.

Wherever else he may have counted cost — though nothing suggests he did — Coatalen certainly didn't shave his budget in the engine department. Individual cylinder dimensions, 140 x 130 mm bore and stroke, foreshadowed modern oversquare proportioning. Each bank of the 50-degree vee, of course, comprised six cylinders, cast in threesome sub-families. Material for the crankcase, separate cylinder blocks (containing Nitralloy steel liners) and integral heads was aluminum alloy. The forged one-piece crankshaft had a split-race roller bearing between each throw. Big-end bearings were of the same type, alternate connecting rods

(*Continued on page 76*)

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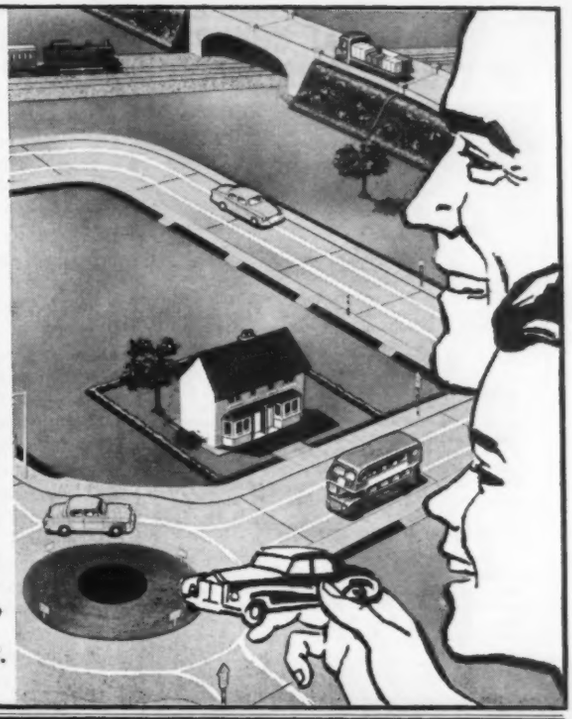

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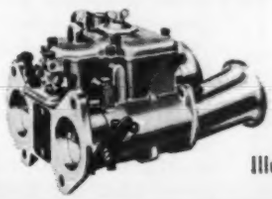

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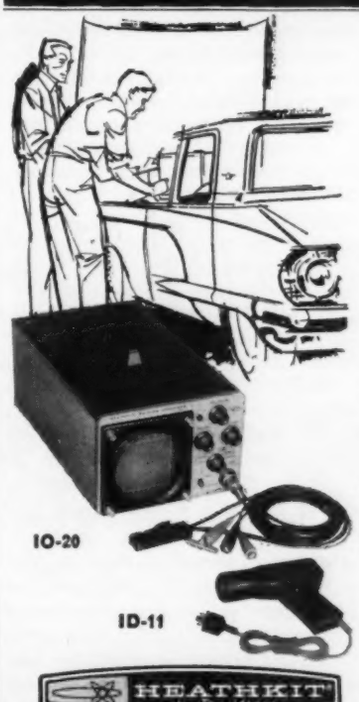

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(Continued from page 75)

being forked to obviate cylinder offset. A train of gears from the nose of the crank drove twin overhead camshafts; the heads contained one spark plug and four parallel valves apiece, the latter directly attacked by the cams and seating on bronze inserts. Exhaust valve stems were hollow.

Advanced and non-idiosyncratic as it was in itself, Coatalen's engine appeared, even on paper, to be very poorly served on the input side, an impression that was confirmed in practice. It had originally been designed to take "gangs" of Roots blowers (their number wasn't specified) but this arrangement was abandoned in favor of a single enormous centrifugal compressor located between the powerplants and driven, somewhat remotely, from the rear of the rear engine. The blower, some 14 inches in diameter, was stated to be "the biggest of its kind ever built"; source of mixture was a pair of gigantic Amal carburetors with choke diameters of around 5 inches. Distribution was via a 4-inch gallery pipe running the length of both engines. At 2800 crankshaft rpm, corresponding to maximum power, the supercharger made 17,000 revolutions per minute and produced 4 psi boost.

Other under-hood details were dry-sump lubrication from two 4½-gallon oil tanks flanking the blower, and the first essay in ice cooling ever applied to an LSR car and presumably any car. So whatever the overall merit of Silver Bullet's aerodynamic shape, it anyway had a penetrative prow, unspoiled by radiator air intakes.

Another feature Silver Bullet pioneered in the LSR field was an air brake as a supplement to water-cooled but otherwise normal wheel brakes. But perhaps "pioneered" does more than justice to Coatalen's windjammer tackle, because Don recalls "it didn't work and I didn't use it". As you can see in a photo on page 47, the device consisted of a horizontally-pivoted panel mounted between twin tail fins. The driver didn't operate so much as liberate it; that is to say there was nothing compulsive about the control mechanism. The area ahead of the pivots was calculatedly larger than that behind them, the idea being that when the hold catch was released by a lever in the cockpit, the panel automatically assumed a retardive slant under wind pressure. In theory.

Malcolm Campbell, in a forward to J. Wentworth Day's book, *Kaye Don, The Man,* stressed Don's unlucky streak, saying "sometimes it has seemed almost sinister." This was a rather somber view of a career that included recurrent Water Speed Records (Kaye was the first to top 100 mph afloat), victory in the 1928 TT (proceeds of which he sank in the Bullet venture), innumerable race and record-breaking successes at Brooklands and elsewhere. On the other hand, his luck was certainly sour the day he and Coatalen hatched their plot for the big silver slug.

Everything went wrong at Daytona. The weather was unseasonably bad, condition of the beach likewise. The first trials showed the car to be overgeared; difficult as it was to work on, this caused delay number one. On the next tryout, as the engines were restarted following a change of plugs, fire broke under the hood and threatened to engulf the cockpit before Don, pincered in under his snug-fitting tiller, could make it overboard. Righting the results of the blaze cost the team delay number two. "Tell England," Don exhorted reporters, "I shall succeed." They told England, and the ink was hardly dry on their quills before trouble with the fuel feed lines set the program back another notch.

Tempers started fraying. Val Haresnape, director of the operation on Daytona city's behalf, complained that Don was high-hatting him and giving out contradictory statements about his intentions and the car's readiness. Don denied it. The story got around that Don and Coatalen (the latter had come along to deal with technical problems) were at loggerheads. Don and Coatalen denied it. Then the blower blew up, a complication that was to be repeated at intervals; evidently anticipating gasworks trouble, Sunbeam had sent no less than six blowers from Wolverhampton, of which only two were to make the round trip.

Worst of all in its effect on morale and what harmony remained, newsmen assigned to Daytona ran out of facts to report and resorted to picturesque fiction. Example: Don had issued a flamboyant challenge to Campbell and Segrave for a match race at Brooklands, claiming he'd prove himself a better man than either. Don cabled hot denials to both. People who'd never traveled faster than sixty in their lives started whispers anent Don's "cowardice", alleging the only reason he didn't go right out and blow the record sky-high was that he was afraid to. Sensitive to such slurs, which couldn't have been wider of the mark, he made his aforesaid 186 mph run under conditions that were unsafe for a century and a half and shaded to suicidal at three miles per minute; for most of the mile he was driving blind, his windshield coated with waterlogged sand. But that was wrong too. "Ridiculous recklessness," carped officials in attendance.

As April came in on March's slipstream — and *still* no record, or even the apparent likelihood of one — the vexations of Bill Sturm, Don's American manager, mounted and multiplied. Probably the worst was a widely printed story that Cannonball Baker, the veteran American racing driver, had been "authorized" to take over the driving assignment from Don. Again, of course, the inference behind this groundless tale was that Don was afraid of his own car. Sturm denied it, Don denied it, Baker refuted the denials, newspaper readers on both sides of the ocean didn't know what the hell to believe, and Daytona's publicity bureau wasn't altogether displeased with a rumpus that anyway refocused waning attention on Daytona, Florida.

With the expedition's time allowance expired, Coatalen applied for a few days' extension and got it, but all in vain. He also added in a casual aside that if they didn't get the record *this* year they'd be back in '31 with, of all things, an oil-burning version of the silver slug. Did he, one wonders, just say this because he liked to hear his own voice, or did he seriously contemplate designing another all-new engine? His associates were still pondering the puzzle as the time bonus ran out and Coatalen announced a surrender to circumstances and

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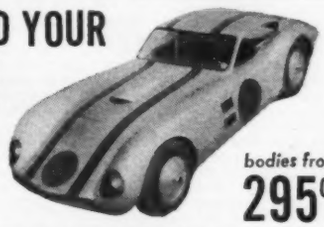

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the current bid's abandonment. Silver Bullet and her attendant tons of parts and equipment were resignedly crated and the expedition shook the sand of Daytona from its feet, never, as it transpired, to return.

Warming to the theme of Don's allegedly "almost sinister" luck, Malcolm Campbell had gone on to say that "when we racing motorists attract a hoodoo it seems to settle on us like a very vulture." In Kaye Don's case it wasn't the man but the car that attracted the very vulture. He'd no sooner unburdened himself of Silver Bullet than he regained his Brooklands lap record and the symbolical bird alighted on the shoulder of the car's second owner, Jack Field. As at Daytona, so at Southport, the slug seemed to be busting out all over with grudges against human-kind. Lacking the local *lebensraum* and the personal resources for a try at the LSR itself, Field planned to shoot for Malcolm Campbell's British Empire record, 217.6 mph, set at Verneuk Pan, South Africa. The nearest he got to it was a two-way average of 174 for the mile, following a best run in one direction at 195, unofficially timed. Field had acquired the surviving two spare blowers but these weren't enough. The long induction gallery was located directly above the exhaust takeoffs, with the result that the charge heated up on its long journey to the remoter ports and exploded, either bursting the blower casing or tearing vanes off. When this happened, the whole surrounding region caught fire. In Daytona form the car had sewerlike outside exhaust pipes, of a cross-section conforming to the curve of the body flanks, into which they were countersunk. For Southport these drains were removed, their recesses blanked off and open stubs used. Whatever other effect it may have had, this mod didn't make any difference to the Bullet's fire-proneness. Charles Cooper, John Cooper's father, was the mechanic in charge of the Field operation and showed much resource in attempts to beat this in-built snag, but to no avail.

The day Jack Field hit 195, beach conditions were good, and in preparation for an official attack the following morning the course was elaborately roped and flagged, reporters poured in and large crowds of spectators converged on Southport. Then, overnight, the weather broke; a tide described as "the biggest for years" smote the shore, flattening every stitch of bunting and leaving the beach in a hopelessly soggy state. But Field, determined to give the public something for its money, opted to run. Silver Bullet was towed out, fired up and falteringly gathered way. Fifty yards along the beach it sank under its ponderous weight, clear to the axles. They manhandled it out, made one more attempt and clocked 174.09 mph. Related to the target figure of anything over 217.6, this was pathetic enough, but it gave the car its one claim to such fame as it possesses: 174.09 mph was the highest speed ever timed in Britain — and still is!

Fred Dixon, last of the three Silver Bullet musketeers, died in 1956, so we'll never know what he thought of Louis Coatalen's crowning *gaffe*. His idea, Field remembers, was to throw the whole blower apparatus out the window and start fresh with twenty-four carbs flanged directly to the ports. It might have worked, even. —*DM*

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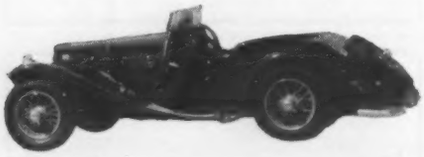

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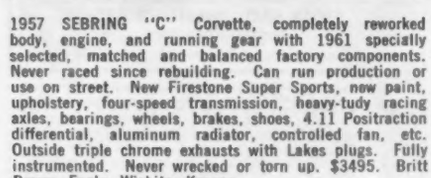

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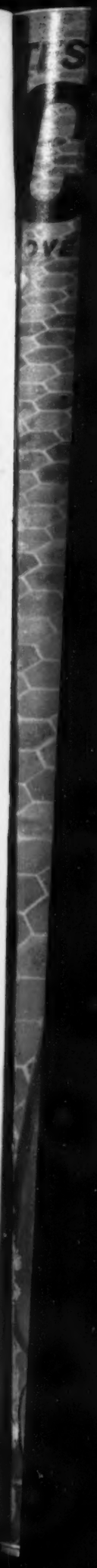
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